POPULAR SCIENCE

MONTHLY

MECHANICS AND HANDICRAFT

Electric Car for Boys—PAGE 136

25¢ September

AUG 20 P.M.

How They've Made Hot Rods Safe PAGE 142

Copyrighted material

HERE'S HOW TO SAVE RIGHT UP TO 75%

Thousands of **PRECISION-BUILT** watches arrived from Switzerland too late for last Christmas and far too early for the next! These superb timepieces (and binoculars) must be sacrificed to raise cash! Our misfortune is your lucky break! Buy direct from the importer and **SAVE** up to **75%** on ONE watch or binocular! Do not pass up these **LIFETIME BARGAINS!** Remember: You get a **7 DAY HOME TRIAL**—full price back unless delighted! Handsome **COBRA EXPANSION BAND** included on all **17 jewel** watches. Also: **GUARANTEE CERTIFICATE,** instructions and famous **PENCIL LIGHTER** included on every purchase! **RUSH COUPON NOW!**

THORESEN DIRECT SALES
131 West 33rd Street, Dept. 7-K, New York 1, N. Y.

Get yours

SOLD ON APPROVAL

Your money back if not delighted!

Unlimited Guarantee
EXCLUSIVE OF PARTS

Repairs on watches, if ever needed, absolutely **FREE.** Never a charge for labor, handling, adjusting, etc. for the **LIFETIME** of this firm! You can rely on **THORESEN**—because we make **lifetime friends!**

18 Karat Rolled Gold Plate
CHRONOGRAPH

IMPERIAL DE-LUXE model of famous **Recipro-Register Chronograph. BEST** brand available! Thousands of sportsmen thruout America paid much, much more because this is the **Prince** of modern watches—last word in superb **THIN** styling! Precision engineered in highest traditions of Swiss craftsmanship. Check feature by feature with **$100.00** chronographs! **3 multi-function dials automatically coupled to give accurate, unbroken time lapses • 30 minute register • Synchronized for hours, minutes, seconds and 1/5th second • Back to Zero or continued operation • Shock resistant • Anti-magnetic • 18 Karat Rolled Gold Plate • Stainless Steel back • Luminous hands & Numerals • Clear, unbreakable crystal • Double push-stop buttons • Built-in tachometer & telemeter • Genuine Cobra Band • Split second calibration • Fashionable THIN design • measures SPEED and DISTANCES of moving objects, horse & auto races, lightning, airplanes, photography, shop operations, radio programs, etc. Besides, it's a sleek, admiration winning watch of superb accuracy! The De-Luxe 18 Karat RGP model** (No. 233-RG) now yours for only **27.25** plus **2.73** tax, total: **29.98.** Naturally this price is for a short time only.

17 Jewel Automatic
CALENDAR

Month, date, weekday, hour, minute, second YOURS at a glance with this Swiss engineering triumph! Impressive! Very thin! real excellence! **DATE CHANGES AUTOMATICALLY!** Gears precision coupled. Patented design and quality metals make for smooth, long life operation. SPECIAL QUALITY FEATURES: **17 Jewel Swiss movement • Unbreakable crystal • Nite-glo numerals • Stainless Steel back • Streamlined design—very THIN!** Compare with other calendar watches selling for **$59.50** and if not thrilled with wonderful performance, return for full price refund! Our sacrifice price—**14.95** plus 1.50 excise tax, total: **16.45.** Order by **No. 243-C.**

17 Jewel—Full Swing
AUTOMATIC

The **JET-O-MATIC** makes ordinary watches old-fashioned by comparison! It's the **360° FULL-SWING AUTOMATIC!** Just set it . . . then forget it! It winds itself as you wear it. It can **never** be overwound. Its 17 Jewel **INCABLOC-PROTECTED** movement is a great achievement of **SCHILD**—three time **Gold Medal** winner. Besides it's Water & Shock resistant. You can **DROP** it . . . **JOLT** it . . . even **SWIM** with it! **OUTSTANDING QUALITY FEATURES: Raised Gilt Numerals • Radium Applique Markings • Unbreakable Crystal • Tested 17 Jewel Precision Movement • Hairline Sweep-second • Stainless Steel Screwback • Split-second calibrations • Thin, small, smart!** NOW — **NOT $92.50.** Special summer price—**$24.95,** plus **10%** tax, total: **$27.45.** Order by Number **238.**

Camera
GADGET BAG Value!

Wherever you go, have your photographic equipment at your fingertips. Protect your valuable camera at tremendous savings. Use the convenient, easy-to-carry "International" Camera Gadget Bag. All the necessary storage space for flashgun, extra film, filters—everything you need to take fine pictures. Smartly styled in 18-gauge heavy-duty, scuff-resistant "Granitol" in attractive luggage tan. Zippered on top and in side compartment. Size 8½"x7x4". Compare with gadget bags up to **$7.50. Order by No. 9. Pay** rock-bottom price of **2.95**

Copyrighted material

DIRECT *from the* IMPORTER!

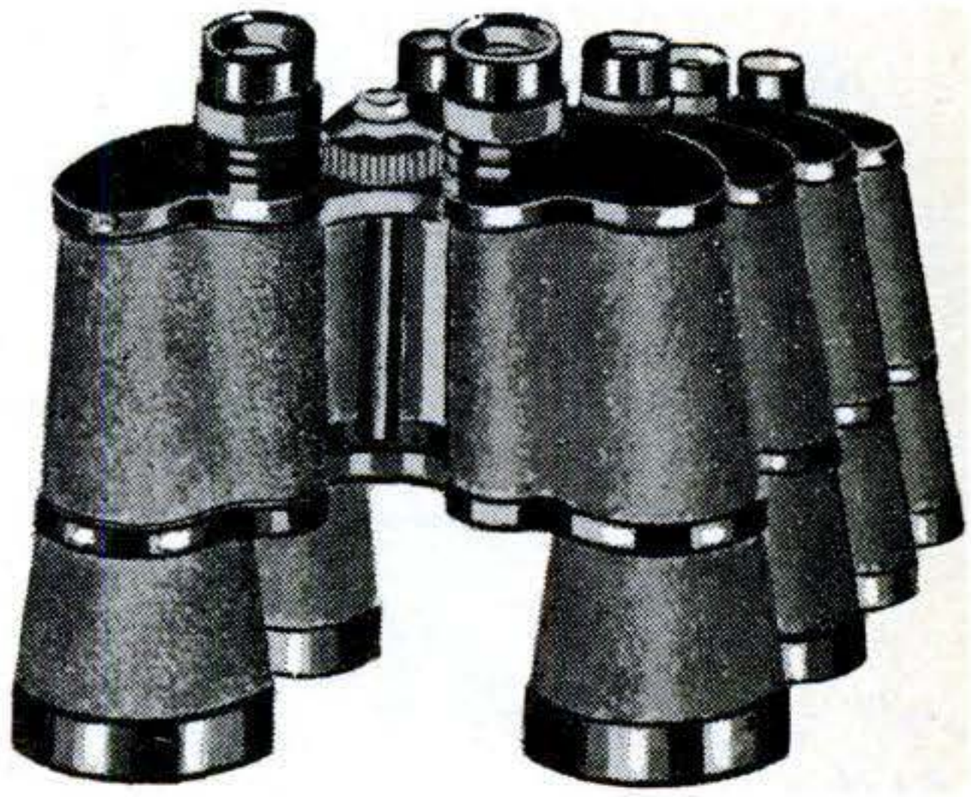
"POWER-HOUSE" PRISMATIC BINOCULARS

LOOK OVER THESE SENSATIONAL PRICES!

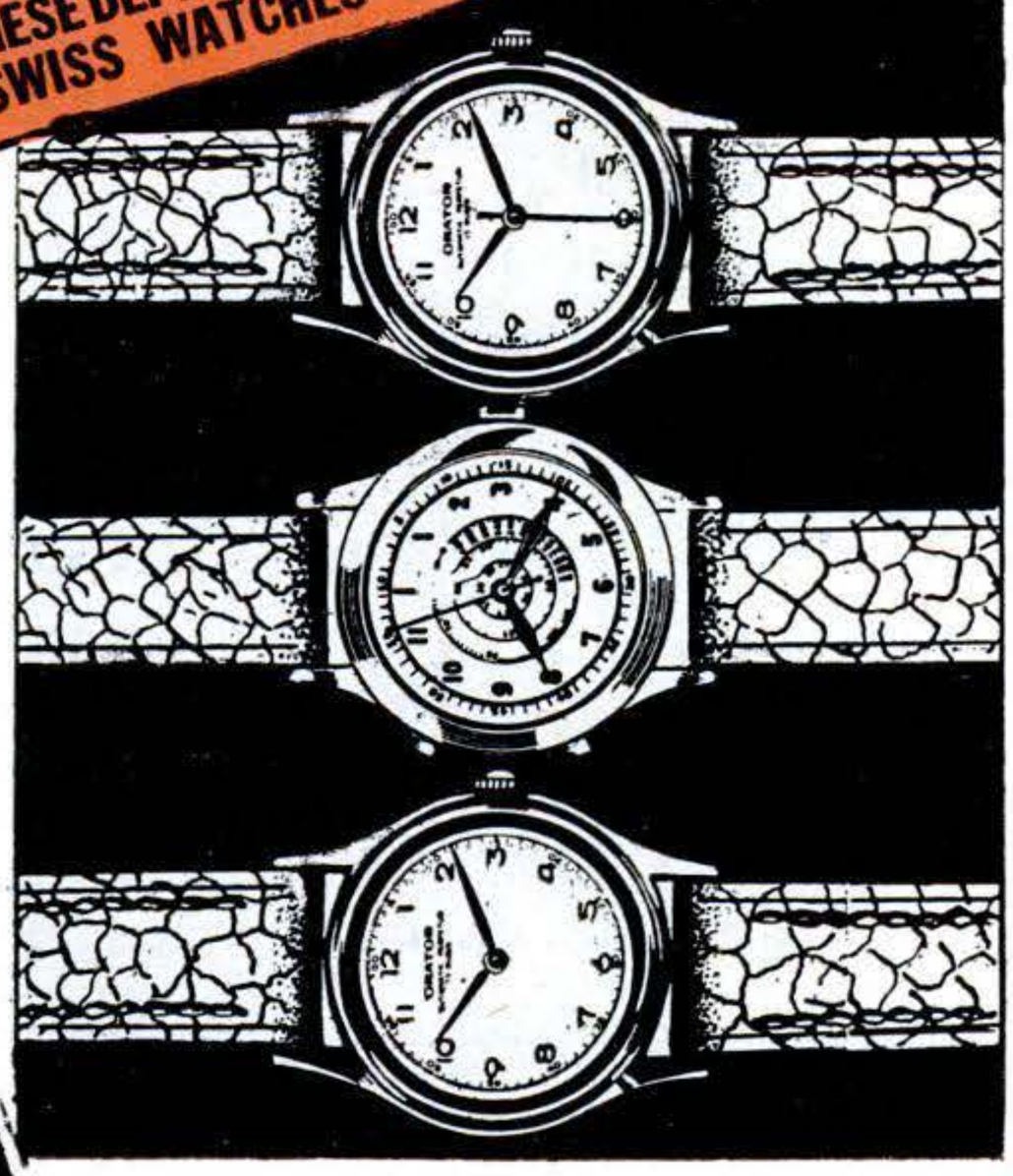
We stake our reputation on these ultra-powerful imported binoculars. All are **COATED.** All are **ACHROMATIC COLOR CORRECTED.** All are fully **PRISMATIC.** And, best of all, they are **FOCUS-BALANCED,** a Thoresen feature that assures you years of enjoyable viewing without undersirable aberrations! Compare prices...compare **QUALITY!** All are equipped with fine leather case and double straps.

NOTE—ALL PRICES FULLY TAX PAID—NOTE

- **7x50mm** Individual Focus (No. **157**)—Tax Paid.....**33.95**
- **7x50mm** Center Focus (No. **153**) Sharp! Tax Paid....**39.85**
- **8x30mm** Center Focus (No. **146**) Power! Tax Paid....**38.50**
- **10x50mm** Indivi. Foc. (No. **155**) Light! Tax Paid.....**59.95**
- **10x50mm** Center Foc. (No. **155-C**) Tax paid.. .....**64.95**
- **16x50mm—TERRIFIC POWER!** Our greatest value! Truly a lifetime investment in thoro enjoyment. **LOOK** at our low, low prices! Tax Paid too! No. **156** (Ind. Foc.)—**66.50.** No. **156-C** (Center Foc.), only.....**71.50**



SCOOP! YOUR CHOICE OF THESE DEPENDABLE SWISS WATCHES **4.44** PLUS 45c TAX



YES . . . THEY'RE GUARANTEED!

Every one of these watches bears the same **UNLIMITED GUARANTEE EXCLUSIVE OF PARTS** as our 17 jewel watches. They are really dependable and should give years of accurate timing. **NEVER BEFORE** offered at this sensationally **LOW** price! Get several . . . one for yourself, another for that active boy of yours. **ALL ONE LOW PRICE—4.44, plus 10% tax, total, only—$4.89**

JEWELED SHOCK RESISTANT WATCH

The **STAFF SHOCK ABSORBER** built right into this remarkable watch saves you time, worry, aggravation! Use at sports, work, or as an attractive all-around watch! Actually defies breakage! Luminous dial, sweep-second hand, unbreakable crystal, jewelled Swiss movement, leather band. (Add $1 if metal flexible band is desired). **Some value!** No. **260.** Only 4.44, plus 45c tax, total..... **4.89**

"MECHANICAL BRAIN" SPORTS WATCH

Budget priced edition of our famous CHRONOGRAPH. Measures distance. Times sports. Times speed of autos, horses. Times photography and laboratory experiments. Times workshop operations. It's also a dependable wrist watch. Uses 2 PUSH-BUTTONS. Has: unbreakable crystal, night-glo numbers & hands, sweep-second. If Metal Flexible band is desired, add $1. No. **236.** Slashed price: 4.44, plus 10% tax, total: **4.89**

DELUXE GILT DRESS WATCH

Last word in smart styling for men! Yellow gold color effect case. Deluxe dial. Unbreakable crystal. This watch makes a terrific impression—looks like a $50.00 timepiece. Yet it's accurate and should give you long, satisfactory service with a minimum of care. No. 200-X. Rockbottom price—**4.44.** Tax only 45c, making a total of..... **4.89**

Free!

AUTOMATIC PENCIL-LIGHTER

You've seen this famous style of **PENCIL-LIGHTER** in jewelry stores everywhere selling from **$4.95 to $15.** Given **FREE TO YOU** for trying any Thoresen item on these pages! You'll be proud and delighted to own this magnificent Pencil-Lighter! Propel-repel pencil gives you weighted balance writing. Simply press clip for a sure-fire light! Satiny silver color. Protective device prevents accidental lighting in pocket. Tight spring clip prevents loss. Uses standard thin leads, lighter fluids and flints. Given you merely for **TRYING** our merchandise! If not delighted with purchase, return merchandise, but **KEEP** and enjoy the Pencil-Lighter as our lifetime gift! **RUSH COUPON NOW!**

Mail now for FREE PENCIL-LIGHTER & HOME TRIAL!

THORESEN DIRECT SALES
131 West 33rd St. Dept. 7-K, New York 1, N. Y.

RUSH the following on **7 Day Trial** with **Guarantee Certificate.** Include the **PENCIL-LIGHTER** at no extra cost. If not delighted, you are to return the price paid but the **PENCIL-LIGHTER** is mine to **KEEP** in any case!

☐ Remittance enclosed—send **prepaid.** ☐ Send C.O.D., **plus post.**

Item No.	Name of Article	Price

NAME.....

ADDRESS.....

TOWN.....**STATE**.....

Copyrighted material

America's Leading New-Idea Magazine for 80 Years

Founded 1872, Vol. 161: No. 3

POPULAR SCIENCE

REG. U. S. PAT. OFF. *Monthly*

Mechanics and Handicraft

VOLTA TORREY, EDITOR • Howard Allaway, MANAGING EDITOR
Howard C. Jensen, ART EDITOR • Frank Rowsome Jr., ASSISTANT MANAGING EDITOR

SENIOR EDITORS: Harry Walton (Mechanics & Handicraft), Hartley E. Howe (Features), Martin Mann (Copy).

ASSOCIATE EDITORS: Alden P. Armagnac, Devon Francis, Sheldon M. Gallager, Kendall W. Goodwyn, Wesley S. Griswold, Herbert O. Johansen, Herbert R. Pfister, Denis Sneigr, Robert P. Stevenson, Ruth Westphal, Andrew R. Boone (Los Angeles).

ART: Harry Samuels (Director), Herbert Anthony, Rolf O. Erickson, Eric Karminski Jr., Richard Meyer, Frances Cooper Daniels.

PHOTOGRAPHY: W. W. Morris (Director), Hubert Luckett, Orlando Guerra.

EDITORIAL ASSISTANTS: Harriet Trowbridge, Julia C. Bove, Carol Ennis, Rita K. Gilbert, Georgette Sparks, Katharine M. Townsend, Jeanne Van Houten.

This Month's Big Features:

You, Too, Can Shoot a Plane..... 83
He Makes Shop Jokes Pay..... 90
"Little Black Box" Now Catches Speeders.... 94
Magicians Scoff at Flying Saucers..... 96
How TV Tricks Take You Space Traveling..106
Lithium, the H-Bomb Metal.....111
His Stanley Steamer Is Only 2 Years Old....125
Auto Battery Powers Cars for Kids.....136
They've Made Hot Rods Safe.....142
Trees Can Make a House More Valuable.....150
Wilbur Shaw Drives the MG.....155
The Easy Way to Pave Your Yard.....163
You Can See Saucers Fly.....167
How to Measure Gas Mileage Accurately.....172
Gus Pulls a Trick Play.....180
Broom on Wheels Sweeps Your Lawn.....193
How They'll Photograph the Series.....211
A 7-Ounce Radio You Can Build.....215

It's handsome, it's modern and it's all welded. You can build modern metal furniture like this by becoming a hot man with an electric arc. If you want to swear off bolts and rivets, turn to the story on page 202.

(More features and departments are listed on page 4.)

Godfrey Hammond, PUBLISHER • Stephen P. Glennon, ADVERTISING DIRECTOR

ADVERTISING OFFICES: NEW YORK — 353 Fourth Ave.; CHICAGO—360 North Michigan Ave.; DETROIT—820 Book Bldg.; SAN FRANCISCO—681 Market St.; CLEVELAND—328 Citizens Bldg.; LOS ANGELES—2550 Beverly Blvd.
EDITORIAL OFFICES: 353 Fourth Avenue, New York 10, N. Y.

Published monthly at 353 Fourth Avenue, New York 10, N. Y., by Popular Science Publishing Co., Inc., Godfrey Hammond, President and Treasurer; R. C. Wilson, Stephen P. Glennon, Vice-Presidents; F. W. Briggs, Secretary. Entered as second-class matter Dec. 28, 1918, re-entered as second-class matter July 26, 1948, at the Post Office in New York, N. Y., under the act of March 3, 1879; additional entry as second-class matter at Dayton, Ohio. Entered as second-class matter at the Post Office Department, Canada. Printed in U.S.A. Copyright, 1952, by Popular Science Publishing Co., Inc. All rights reserved in the United States, Great Britain, and in all countries participating in the International Copyright Convention and Pan-American Copyright Convention. Yearly subscriptions to United States, its possessions and Canada, $3.00 (2 years, $5.50; 3 years, $7.50); foreign countries $1 per year extra. Four weeks' notice is needed to change a subscriber's address. Please give both old and new addresses, including postal zone numbers.

New oil economy... lasting power

for thousands of EXTRA miles!

SOLID CHROME PROTECTS THESE WEARING SURFACES

Two interchangeable expander springs with each oil ring—NORMAL PRESSURE spring for rebored and slightly worn cylinders, HiPRESSURE spring for badly worn engines and known oil pumpers.

Perfect Circle's

2 in 1 chrome piston ring set

Your car and your money . . . both will go farther with a set of 2-in-1 Chrome Piston Rings. For the 2-in-1 Chrome Set *more than doubles the life* of cylinders, pistons and rings!

Positive oil control is assured because *only* the 2-in-1 Set provides two interchangeable expander springs with each oil ring. For the first time, mechanics can select the spring pressure that's *right* for your engine. And with 2-in-1 you'll enjoy smooth, instantly responsive power, right from the start with no tedious break-in period.

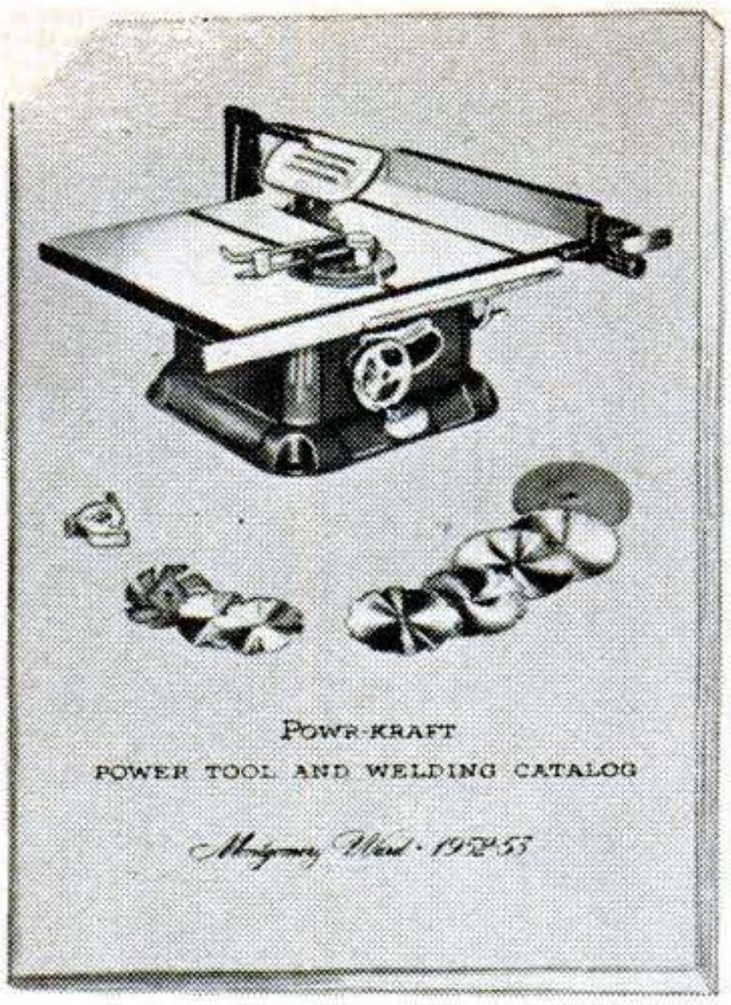
If your car has lost its pep . . . if it's wasting gas and oil . . . give it a whole new life of sustained power and oil economy with Perfect Circle's 2-in-1 Chrome Set! Ask your Doctor of Motors, your reliable mechanic, to install it in your engine. He'll respect your judgment!

Perfect Circle

PISTON RINGS

The Standard of Comparison

Copyrighted material

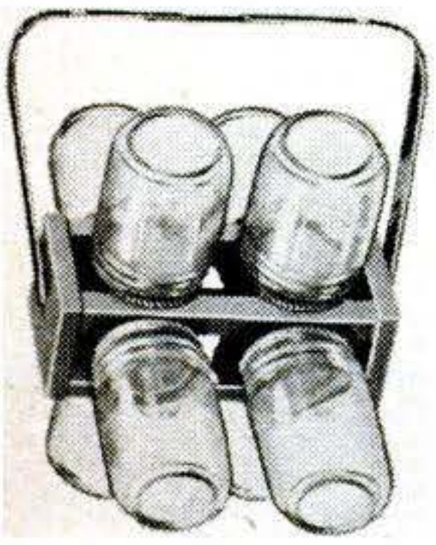


FREE

WARDS 1952-53 POWR-KRAFT POWER TOOL AND WELDING CATALOG

48 PAGES OF POWER TOOLS and accessories for the beginner, advanced hobbyist and for production shops. Includes wood and metal working equipment, portable electric tools, welding supplies, motors. Famous brands such as Mall, Shopsmith, Beaver, Globe, and Dumore, plus full line of Wards Powr-Kraft tools. Send for this FREE Catalog today!

SPECIAL GET-ACQUAINTED OFFER



Until Oct. 15, 1952
Workshop Dispenser
$1.00 Postpaid

Send for our new 1952-53 Power Tool Catalog and we'll send you this handy 8-jar workshop dispenser for only $1, Postpaid. Complete with mounting bracket.

Montgomery Ward

CHICAGO • ALBANY • BALTIMORE • DENVER
FT. WORTH • KANSAS CITY • OAKLAND
PORTLAND, ORE. • ST. PAUL

Clip and mail coupon to nearest city above—NOW!

MONTGOMERY WARD, Dept. WM-PS9

☐ Please send me Wards free 1952-53 Powr-Kraft Power Tool and Welding Catalog.

☐ I am enclosing $1.00. Send me Workshop Dispenser and Wards free Power Tool Catalog.

Name _____
(Please PRINT Plainly)

Street Address or
Route and Box No. _____

_____

Post Office _____ State _____

News and Pictures

"World's Finest" New Tank 88
New Ideas from Europe 99
168 Miles on a Gallon of Gas 104
Car Carries Its Own Folding Garage 110
Ideas Put Teen-Agers in Business 118
British Build Plastic Wings 122
This Piano Can Play Rough 124
Cardboard Chair Set Up in 5 Minutes 132
Fans in Tubes Drive French Planes 134
Livestock Exposed to Hot Atoms 139
How a Grain Reaper and Binder Works 158

Mechanics & Handicraft

New Speaker Gives Hi-Fi for $30 171
The Road to More Miles Per Gallon 175
How to Read Your Tires 176
Cabinets Clean Up Bathroom Clutter 185
How to Rig an Attic Ladder 188
"Dynaflows" Run Home Machines 219
New Shingles Cover Old Roof 220
Porch Converted to Extra Room 224

Departments

Letters 10
New Ideas from the Inventors 115
I'd Like to See Them Make 131
Aids to Modern Living 147
P.S. Last Minute News and Notes 162
Hints from the Model Garage 183
Craftsmen in Uniform 198
Keeping the Home Shipshape 200
New Shop Ideas 208
New Tools 222

NEXT MONTH . . .

Cutting Winter Fuel Bills

Weather stripping is one answer. All those cracks around windows and doors add up to one big heat leak unless you plug them. What weather stripping to use and how to apply it will be detailed next month.

Copyrighted material

Picture yourself going places

You've done it often. Call it day-dreaming if you like, but you've seen yourself in a bigger job — giving orders and making decisions — driving off in a smart new car — buying your family a fine home.

There's nothing wrong with dreams. But how about making them come true? *You can do it,* if you're willing to try!

Look around you. The men who are going places are the *trained* men. They've learned special skills that bring them better jobs and higher pay. It's the men *without* training whose dreams never come true.

What are you going to do about it? Just wait and wish? If you really *want to succeed,* you can get the training you need by studying at home in your spare time. International Correspondence Schools offer you a course in just about any field you choose, giving you the practical plus the bedrock facts and theory. No skimming or skimping! And you'll be earning while you learn. Students report better jobs and more pay within a few months.

Look over the list of subjects in the coupon below. Pick out the one that interests you most — the one that holds the greatest future for you. Then mark the coupon, and mail it today. *Find out* what I. C. S. can do for you. It costs only a stamp or postcard, but it's the first step if you want to go places!

SMARTEST THING HE EVER DID

"I noticed that the trained men held the better jobs. That's when I decided to take an I. C. S. course. Enrolling with I. C. S. was one of the smartest things I ever did. The position as Plant Engineer I hold today is largely due to the 'know-how' derived from my I. C. S. texts. I. C. S. can help any man who will study."

L. P. S., Elkhart, Ind.

GOING INTO THE ARMY OR NAVY? Earn more pay, win a higher rating, quicker promotion by having this specialized knowledge and credit. I. C. S. courses have helped thousands advance in the services.

INTERNATIONAL CORRESPONDENCE SCHOOLS

ICS

BOX 7610-N, SCRANTON 9, PENNA.

☐ Please send information about I.C.S. employee training for companies.

Without cost or obligation, please send me the booklet about the course BEFORE which I have marked X:

ART
☐ Commercial Art
☐ Magazine and Book Illustrating
☐ Cartooning
☐ Show Card and Sign Lettering
☐ Fashion Illustrating

AUTOMOTIVE
☐ Automobile, Mechanic
☐ Auto-Elec. Technician
☐ Auto Body Rebuilding and Refinishing
☐ Diesel—Gas Engines

AVIATION
☐ Aeronautical Engineering Jr.
☐ Aircraft Engine Mechanic
☐ Airplane Drafting

BUILDING
☐ Architecture
☐ Arch. Drafting
☐ Building Contractor
☐ Estimating
☐ Carpenter and Mill Work
☐ Carpenter Foreman
☐ Reading Blueprints
☐ House Planning
☐ Plumbing
☐ Heating
☐ Steam Fitting
☐ Air Conditioning
☐ Electrician

BUSINESS
☐ Business Administration
☐ Certified Public Accountant
☐ Accounting
☐ Bookkeeping
☐ Stenography and Typing
☐ Secretarial
☐ Federal Tax
☐ Business Correspondence
☐ Personnel and Labor Relations
☐ Advertising
☐ Retail Business Management
☐ Managing Small Business
☐ Sales Management
☐ Salesmanship
☐ Traffic Management

CHEMISTRY
☐ Chemical Engineering
☐ Chemistry
☐ Analytical Chemistry
☐ Petroleum—Nat'l Gas
☐ Pulp and Paper Making
☐ Plastics

CIVIL, STRUCTURAL ENGINEERING
☐ Civil Engineering
☐ Structural Engineering
☐ Surveying and Mapping
☐ Structural Drafting
☐ Highway Engineering
☐ Reading Blueprints
☐ Concrete Construction
☐ Sanitary Engineering

DRAFTING
☐ Aircraft Drafting
☐ Architectural Drafting
☐ Electrical Drafting
☐ Mechanical Drafting
☐ Structural Drafting
☐ Sheet Metal Drafting
☐ Mine Surveying and Drafting

ELECTRICAL
☐ Electrical Engineering
☐ Electrician
☐ Electrical Maintenance
☐ Electrical Drafting
☐ Electric Power and Light
☐ Lineman

HIGH SCHOOL
☐ High School Subjects
☐ College Preparatory
☐ Mathematics
☐ Commercial
☐ Good English

MECHANICAL AND SHOP
☐ Mechanical Engineering
☐ Industrial Engineering
☐ Industrial Supervision
☐ Foremanship
☐ Mechanical Drafting
☐ Machine Design-Drafting
☐ Machine Shop Practice
☐ Tool Design
☐ Industrial Instrumentation
☐ Machine Shop Inspection
☐ Reading Blueprints
☐ Toolmaking
☐ Gas—Electric Welding
☐ Heat Treatment—Metallurgy
☐ Sheet Metal Work
☐ Sheet Metal Pattern Drafting
☐ Refrigeration

POWER
☐ Combustion Engineering
☐ Diesel—Electric
☐ Electric Light and Power
☐ Stationary Steam Engineering
☐ Stationary Fireman

RADIO, TELEVISION, COMMUNICATIONS
☐ General Radio
☐ Radio Operation
☐ Radio Servicing—FM
☐ Television
☐ Electronics
☐ Telephone Work

RAILROAD
☐ Locomotive Engineer
☐ Diesel Locomotive
☐ Air Brakes ☐ Car Inspector
☐ Railroad Administration

TEXTILE
☐ Textile Engineering
☐ Cotton Manufacture
☐ Rayon Manufacture
☐ Woolen Manufacture
☐ Loom Fixing
☐ Finishing and Dyeing
☐ Textile Designing

HOME ARTS
☐ Dressmaking and Designing
☐ Cookery
☐ Tea Room Management

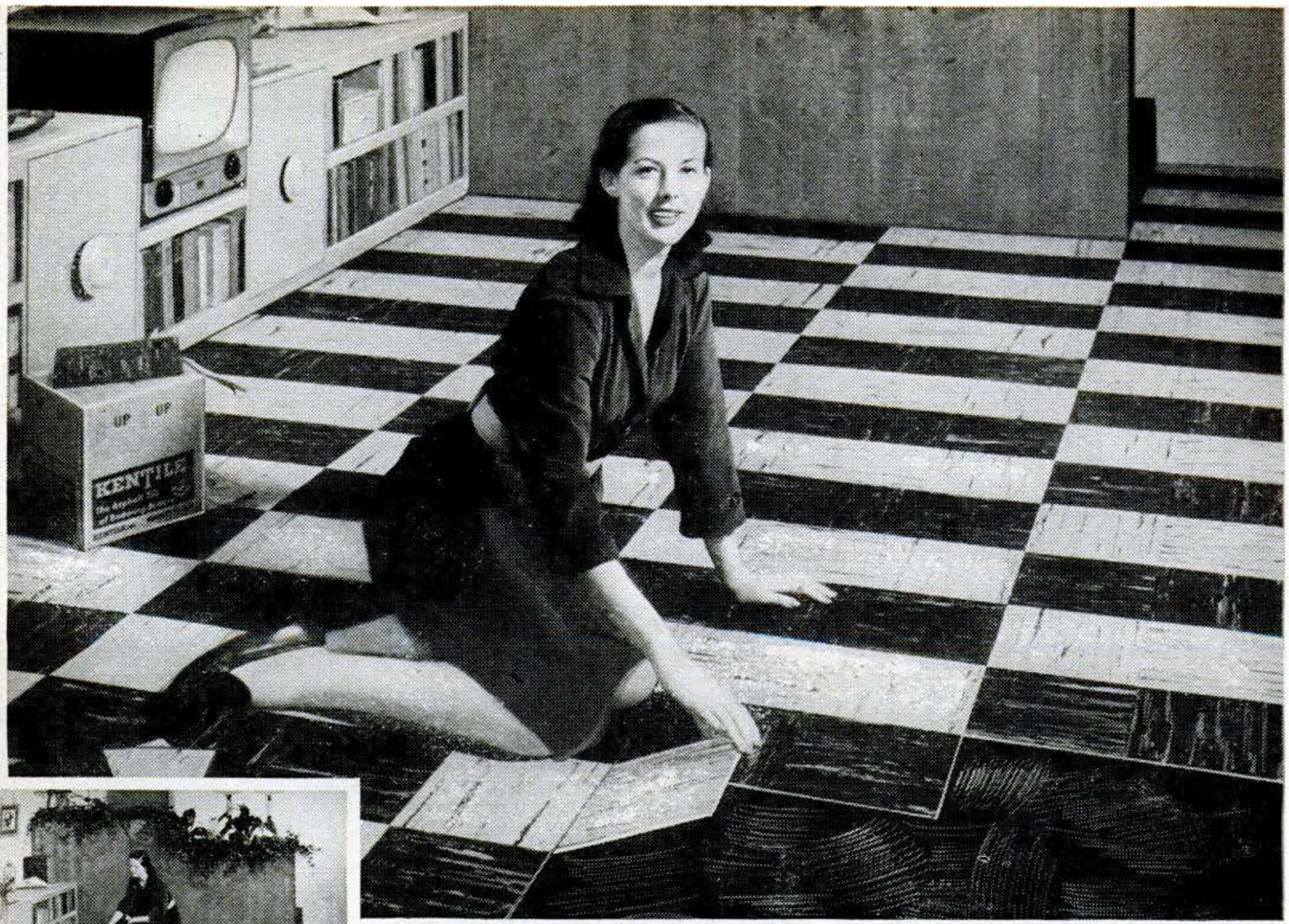
Name_____ Age_____ Home Address_____

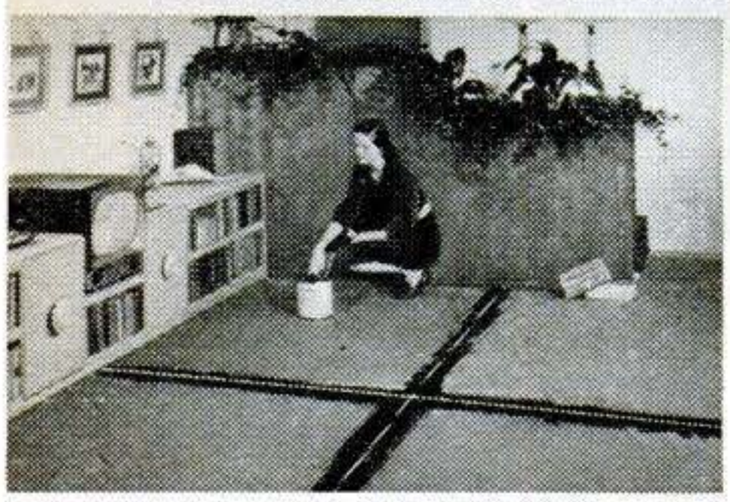
City_____ State_____ Working Hours_____ A.M. to_____ P.M.

Occupation_____

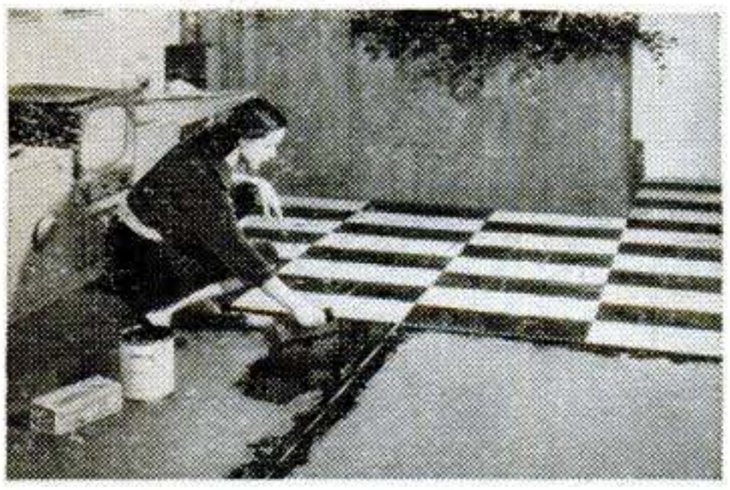
Special tuition rates to members of the Armed Forces. Canadian residents send coupon to International Correspondence Schools Canadian, Ltd., Montreal, Canada.

Copyrighted material





STEP 1 . . . Mrs. Lansing follows the simple instructions. Here she's beginning to spread Kentile Adhesive over half the play room.



STEP 2 . . . She puts tiles down in place, one at a time. When half the floor is covered, the adhesive is spread over the remaining half.

STEP 3 . . . After adhesive is ready, Mrs. Lansing continues installing tiles . . . and the other half of the room is finished . . . and all ready to walk on.

Mrs. Richard Lansing shows how to install a KENTILE FLOOR like this for only $22.25* FOR 9'x16'6" FLOOR

Think of the money you'll save! 26 glorious colors to choose from give you colorful beauty for kitchen, bedroom, living room...anywhere in your house. Cleaning is easy with Kentile...it sheds dirt and stains...gleams like new with occasional no-rub waxings...stays bright and fresh even with the hardest kind of service.

So why buy floor-coverings with just a colored surface that wears off with use? For so little more you can now get wear-resistant Kentile with colors extending right through each tile—and with quality assured by this guarantee.

Only Kentile dealers offer you these low-priced Guaranteed Kentile Floors

*Price quoted is for a 9'x16'6" Kentile floor (less stair area) installed by you. Your Kentile Floor may cost less or slightly more, depending on size of room, colors and freight rates. See your local Kentile dealer. He's listed in the classified phone directory under FLOORS. In Canada, T. Eaton Co., Ltd.

KENTILE, INC., 58 2nd Ave., Dept. H-9, B'klyn 15, N. Y.

KENTILE®

The Asphalt Tile of Enduring Beauty

KENTILE GUARANTEE
FOR SELF-INSTALLED KENTILE

Kentile, Inc. will provide new tile without charge for any Kentile that wears out and on which colors wear off . . . during your own occupancy of your home wherein you have installed Kentile. This guarantee does not apply to damage caused by improper handling, or *failure to follow the instructions* for installation and maintenance available at your Kentile dealer's.

Copyrighted material

THE GIANT LIBRARY-SIZE DICTIONARY YOU'VE ALWAYS DREAMED OF OWNING...

Yours Free!

—as Your Gift for Joining "America's Biggest Bargain Book Club"

This Brand-New World Edition of

WEBSTER'S ENCYCLOPEDIC DICTIONARY

OVER 2,000 GIANT PAGES! SHIPPING WEIGHT OVER 10 LBS!

More Than 140,000 Definitions! Maps! Color Plates! Complete World Atlas! Latest Official Census Figures!

JUST OFF THE PRESS—After 10 Years of Work At a Cost of Nearly ONE MILLION DOLLARS! Latest Information on THOUSANDS of Subjects

YES! This new WEBSTER'S ENCYCLOPEDIC DICTIONARY—regular price $22.50—is yours FREE as a new membership gift from "America's Biggest Bargain Book Club"! And you get it **at once!**

A DOZEN Volumes in One

Over 2000 pages—the heart of everything you want to know about our language, and scores of other everyday subjects. Packed with brand-new facts about our world; its newest terms; geography, natural wonders, arts, sciences, etc. Spells, pronounces, defines over 140,000 words and phrases. Atlas of the World in **full color.** Over 1400 illustrations, maps. Metric System of Weights and Measures; latest census figures of every U.S. city, town, etc., etc.

But this amazing offer may never be repeated. So mail coupon **today!**

A DOZEN VOLUMES IN ONE

Crammed with a World of Everyday Facts On:

- Forms of Address and Greeting
- Signs and Symbols Used in Printing, Industry, Commerce, Finance, etc.
- List of Given Names
- Metric System
- Constitution of U. S.
- Presidents and Cabinet Officers
- Dictionary of Abbreviations, etc., etc.
- NEW CENSUS FIGURES FOR EVERY U. S. CITY AND TOWN
- ATLAS OF THE WORLD IN FULL COLOR
- UNITED NATIONS CHARTER and FLAGS OF THE UNITED NATIONS—in full color
- DICTIONARY OF SYNONYMS AND ANTONYMS
- FULL COLOR PLATES
- A Truly MAMMOTH Volume—9" by 12" by 4½" THICK

Better Marks for Youngsters At SCHOOL!

Imagine how helpful this dictionary will be in your youngsters' school work! With this great authority, a whole treasure-chest of information will be at their fingertips—to help them get more out of their school work.

Published by World Publishing Co. and not by original publishers of Webster's Dictionary or successors.

Over 1400 ILLUSTRATIONS

SEND NO MONEY! PAY POSTMAN NOTHING!

...And You ALSO Get The 1952 Pulitzer Prize Novel THE CAINE MUTINY by Herman Wouk OR, Take One of These: THE SARACEN BLADE by Frank Yerby THE PRESIDENT'S LADY by Irving Stone THE CAPTIVE WITCH by Dale Van Every

1. Simply mail coupon WITHOUT MONEY—and your mammoth WEBSTER'S NEW WORLD DICTIONARY will be sent to you **immediately**, as a new membership GIFT from the Book League. Most amazing, you will **pay nothing, owe nothing** for this handsome volume—worth $22.50 in publisher's edition. WITH it will come the new 1952 Pulitzer Prize novel, "The Caine Mutiny," or any other book in coupon.

2. You Choose Your Own Best-Sellers. Thereafter you will CONTINUE to receive YOUR OWN CHOICE of best-selling books by authors like Somerset Maugham, Daphne du Maurier, Van Wyck Mason, etc. You choose after reading an advance description of each book in the Club's free "Review."

3. Your Savings Are Tremendous. Although the book you select each month may be selling in publisher's edition for $3.00 or more, YOU pay only the Club's bargain price of $1.49, plus few cents for shipping—a saving of up to $1.50! Just think of the great savings you'll make on the twelve books you take during the year!

SEND NO MONEY

Just Mail Coupon Now!

Mail coupon NOW—WITHOUT MONEY—and enjoy this generous gift WITHOUT DELAY. Enjoy, too, the best-seller you select in the coupon. Then you'll realize how much pleasure you're going to get from your membership—at TREMENDOUS savings! **BOOK LEAGUE OF AMERICA, Dept. PS-9, Garden City, N. Y.**

Mail WITHOUT MONEY to
BOOK LEAGUE OF AMERICA
Dept. PS-9, Garden City, N. Y.

Please send me—FREE—the brand-new 1952 giant WEBSTER'S NEW WORLD DICTIONARY of the American Language, over 2,000 pages, weighing 10 lbs., containing over 140,000 definitions, 1,400 illustrations, maps, etc., and enroll me as a member. Also send me as my first Club Selection, the new best-seller I have checked below:

☐ The Caine Mutiny ☐ The President's Lady
☐ The Saracen Blade ☐ The Captive Witch

The best-selling books I choose hereafter may be either the **regular** Selections or any of the **other** popular books described in the Club's monthly "Review." Although the same titles may be selling for $3 or more in publisher's editions, I am to pay only the Club's special low members' price of $1.49 each, plus few cents shipping charges; and I may cancel my subscription at any time after buying twelve books. No dues, no further cost or obligation.

GUARANTEE: If not delighted, I will return Dictionary and first Selection in 7 days, and this membership will be cancelled.

Mr. / Mrs. / Miss .....
PLEASE PRINT

Address.....

City..... Zone No. (if any).... State.....

Slightly higher in Canada.
Address: 105 Bond St., Toronto 2

Copyrighted material

locksmithing and key making

Practical Up-to-Date Course
Only $4.95 Complete

Teaches you PROFESSIONAL "secrets." How to pick locks, de-code, make master-keys, install and service key systems, etc. Step-by-step detailed instructions explain and illustrate every operation. **53 EASY ILLUSTRATED LESSONS**

Plain easy-to-follow self-instruction course. Money-making information for carpenters, mechanics, hardware dealers, gunsmiths, cycle shops, fix-it shops, service stations, maintenance men, every home owner and handyman.

Satisfaction Guaranteed or Your Money Back

Fill in the No-Risk Coupon at bottom of this page. Check "Locksmithing Course" and mail coupon right away. You'll be mighty glad you did!

watch and clock repairing

LEARN AT HOME—IN YOUR SPARE TIME

Prepare NOW for a happy future of prosperity, security. Fascinating, high-grade occupation for men of almost any age or physical condition. You can earn while you learn. Very *practical* course in horology.

FULL PRICE—ONLY $4.95

How-to-do-it lessons for beginners as well as those already in the trade. Thorough self-instruction training in the fundamentals of American and Swiss watches, clocks. Contains a wealth of helpful photos, drawings, diagrams, charts, etc. Only $4.95 for everything! complete. Satisfaction or refund guaranteed. Check "Watch & Clock Repairing" in coupon at bottom of page and mail coupon today.

practical RADIO servicing

SELF-INSTRUCTION COURSE ONLY $3.95 POSTPAID

Complete series of lessons in one big volume . . . teaches you the *practical* side of radio: repair, adjustment, operation, alteration, trouble-shooting. No previous knowledge necessary to master these fundamentals.

STEP-BY-STEP ILLUSTRATIONS

Prepare to set up a shop of your own—or train for the big industrial electronic field. Simplified lessons, including mathematics, review questions, problems, answers. Up-to-date! Only $3.95 complete. Money-back guarantee. Check "Practical Radio Servicing" in coupon at bottom of page—and mail at once.

REAL ESTATE BUSINESS

The foundation of all wealth is land! Train yourself for a career in this booming profession. Here is the basic information you need on how to get started and how to get ahead in real estate.

FULL PRICE, ONLY $6.95 Postpaid

Money-making information! Includes instructions in appraisals, valuations, management, investments, practical real estate operating, low cost housing, the law on real estate transactions including legal forms, etc., salesmanship, and many other subjects a successful real estate man must know. Strictly up-to-date. Complete, only $6.95. Money-back guarantee. Use No-Risk Coupon below.

REFRIGERATION

Just out! Non-technical instructions, up-to-date and authoritative. Latest information on servicing and engineering covering the whole field of PRACTICAL refrigeration, both electrical and absorption. Teaches you the newest methods of repair and servicing of household and commercial cooling units. Explains by means of specially drawn illustrations and easy step-by-step detailed descriptions.

ONLY $4.95 COMPLETE

Includes fundamentals for beginners, plus advanced tricks-of-the-trade for experienced servicemen. Every man who uses refrigeration in his work—every family man who has a refrigerator in his kitchen should get these lessons now to make money, to save money and time. Satisfaction or refund guaranteed. Only $4.95, postpaid. Check "Refrigeration" in the coupon below.

INSURANCE BUSINESS. How to make money selling life insurance. Virtually a self-training course on how to get started in this profitable profession, how to get prospects to buy NOW, plus practical instructions on nearly every other important phase of life insurance business! Actual examples given throughout—no generalized discussion. All brass-tack money-making facts you can turn into quick cash. Full price only $6.95. Mail No-Risk Coupon below.

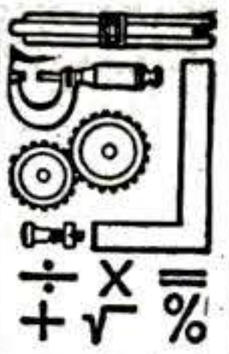
APARTMENT HOUSE MANAGEMENT. Wonderful field for ambitious men and women, especially those over 40. Experienced managers have steady work, good pay and SECURITY. Satisfaction or money-back guarantee. Complete, only $5.95. Mail coupon below today.

WRITING FOR MONEY COURSE. Specific, practical instruction on how to get frequent checks for $5, $10 and more writing shorts, fillers, etc., for magazines, newspapers. Complete in 7 volumes, including "Where and How to Sell Manuscripts." Full price only $5.95.

Better English

Daily YOU are being judged by the language you use. Your other abilities, however great, are generally discounted if your English is faulty. So don't let your shaky English hold you back in business or social life. **Improve your speech and writing** by studying these interesting, PRACTICAL lessons. Teaches you how to increase your vocabulary—learn new words and use them right. How to spell and pronounce correctly. Secrets of good letter writing and entertaining conversation. **FULL PRICE ONLY $2.89.** Simply check "BETTER ENGLISH" in the coupon below. Satisfaction or refund guaranteed.

Short-Cut Mathematics
COMBINED WITH
Practical Mechanics Simplified



COMPLETE COURSE—ONLY $1.95

Be a "master mind." Learn how to juggle figures, do baffling tricks with numbers. Add long columns of figures this *lightning-quick* short-cut way. Multiply 4 figures by 4 figures without using old-fashioned multiplication. Here are speedy, simplified systems used by stage "wizards," expert accountants, engineers, etc. This amazing course includes illustrations, worked-out problems, answers, etc.

SEND NO MONEY. Just send name and address on coupon at bottom of this page. When course arrives pay postman only $1.95 plus C.O.D. postage. Or send $1.95 with your order and we ship postpaid. If not amazed with this sensational course just return it for full immediate refund. Mail coupon below *today!* "Short-Cut Mathematics."

BUILD IT YOURSELF

Be a practical handyman. Save time and money using these professional Tricks-of-the-Trade. Carpentry now made easy! NEW self-instruction course in one handy volume, complete with full-page photographs, diagrams, etc. Teaches practical woodworking, painting & decorating, upholstering, power tools, cabinet making, etc., etc. **COMPLETE PRICE ONLY $1.98.** Money-back guarantee. Check "Build It Yourself" in the coupon below and mail today!

COMPLETE PRACTICAL BLUEPRINT READING COURSE

Interesting, simplified self-instruction lessons for builders, mechanics, electricians, plumbers, welders, carpenters, automotive & aviation workers, etc.

FULL PRICE ONLY $6.95

24 volumes, complete. Includes over 600 actual blueprints, diagrams, and other instructive step-by-step pictures. Unusual bargain. Satisfaction or refund guaranteed. In coupon below check "Blueprint Reading Course."

PHYSICAL THERAPY
COMPLETE PRICE ONLY $4.95

Up-to-date illustrated instructions on the new methods in drugless healing. Surveys the broad field including sections on massage, hydrotherapy, electrotherapy, light and heat treatments, mechanotherapy, etc. Additional material covers the Kenny system on poliomyelitis. This one-volume treatise is entitled "The Practice of Physical Medicine." Check "Physical Therapy" in coupon at bottom of this page and mail at once for prompt shipment. Satisfaction or refund guaranteed!

Artie McGovern's GYMNASIUM COURSE IN PHYSICAL CULTURE

You've *got* to keep fit to get the most out of life. You can't get ahead dragging around a half-dead, listless body. Success DEMANDS energy! And McGovern knows how to bring it to you.

1. HE-MAN BUILD!
2. SMASHING STRENGTH!
3. PEP AND ENERGY!

No gadgets required—no equipment of any kind. All natural methods in this revolutionary self-instruction course. These lively lessons are designed to strengthen vital organs, the author claims, and increase personal efficiency and muscular development. If you achieve glowing good health, he says, it may bring you a NEW POWER to resist some diseases: colds, indigestion, headache, fatigue, nervousness, worry, irritability, insomnia, constipation and many other common ailments. Consists of 12 complete weekly lessons, each with a working chart, guide to health, etc. Thoroughly illustrated for home study.

COMPLETE PRICE ONLY $4.98, includes everything. Satisfaction guaranteed or your money back! Check "Physical Culture Course" in coupon below and mail coupon today, while limited stock lasts.

HOW TO RUN A FARM. Of course you can learn from experience but why wear yourself down and squander several years finding out the hard way. Illustrated instructions on "Fundamentals of Farming and Farm Life" cover: poultry, livestock, soil, implements, crops, gardens, trees, milk products, etc. Only $2.69.

COMPLETE SHORTHAND COURSE. Full 12-lesson self-study course in standard system used by thousands of lightning-quick male court reporters and expert stenographers. 5 times faster than writing longhand! Complete outfit for self-instruction only $4.95.

PRACTICAL ACCOUNTING. For men who want to follow accountancy as a profession and for managers and owners who want to increase their business profits. "Principles of Accounting" covers whole subject and includes hundreds of sample forms, problems, solutions, etc. Full price, only $4.95, complete.

HOW TO SING FOR MONEY

Teaches you the art and business of singing popular songs professionally. Written by ASCAP-member Charles Henderson, one of Hollywood's top-flight vocal coaches—who works with such stars as Bing Crosby, Deanna Durbin, Dinah Shore, etc.

SHORT-CUT TO SINGING SUCCESS!

Learn how to make the most of what you've got. Revealed for you here are the trade secrets of effective auditioning, successful applause endings, developing your voice, diction, tempo, microphone technique, publicity for the beginner, singing with dance bands, etc. Recommended by Kenny Baker, Frances Langford, Deems Taylor, Fred Waring and scores of others. Now is your chance to make room for yourself at the top! *EVERYTHING COMPLETE, ONLY $3.85.* Satisfaction guaranteed or your deposit refunded in full. Mark coupon below: "Sing For Money."

Eugene Feuchtinger's Hints on VOICE DEVELOPMENT

Basic exercises designed to STRENGTHEN your vocal organs and IMPROVE your voice. These new self-instruction lessons include the most important parts from the world-famed voice course put out by the Perfect Voice Institute. *FULL PRICE, ONLY $1.95* In coupon below simply check "Voice Development" and mail coupon at once. Money-back guarantee!

Study HYPNOTISM!

IT'S FASCINATING! IT'S ALMOST UNBELIEVABLE!

This unusual course is published in handy book form . . . and reveals the fundamentals of PRACTICAL Hypnotism. It discloses how an expert operator performs—how he has developed his PERSONAL *POWER* and uses it to bring others under his power and *control*. He can sway some people at his will . . . he can issue commands AND BE OBEYED . . . virtually cast what appears to be a SPELL over his subjects.

Illustrated SELF-Instruction COURSE in Useful Hypnotism

Amazing, simple, easy-to-understand language in lesson form. How to select a subject . . . how hypnotism . . . mental telepathy . . . stage hypnotism . . . self-hypnosis . . . and similar subjects are performed. Also explains how hypnotism combats INFERIORITY COMPLEX. Clear helpful pictures show operating positions, movements. All at a startling *low price*. Full satisfaction guaranteed or your money back. Simply deposit $2.95 plus COD postage with your postman—or send $2.95 with your order and we pay all postage charges: same money-back guarantee. Send for your "Hypnotism Course" today! Use order blank at bottom of this page *right away.*

Complete ONLY $2.95
Send No Money!

Awaken Your Hidden Powers!

YOU are a sleeping giant . . . learn how to release your unused forces. Now ready—PRACTICAL READING COURSE IN EVERYDAY PSYCHOLOGY. Teaches you self-mastery, influencing others, getting ahead, etc. Written by 34 renown psychologists. Low price. *COMPLETE ONLY $6.95.* Satisfaction or refund. Check "Mental Science" in coupon below.

MENTAL SCIENCE

SUPER JU JITSU

The TOUGHEST kind of Man-to-Man Fighting!

A course of instruction in the art of practicing and using this method of applying LIGHTNING-QUICK American Super Ju Jitsu. These amazing lessons show you how it's done . . . in a big ILLUSTRATED home-study course. The weapons are your bare hands—they can be used effectively if you know how and practice the art. Easy to learn; quick. Get these sensational lessons right away—you owe it to yourself and your loved ones. COMPLETE PRICE ONLY $4.95. Nothing more to pay. Your money back if not amazed! Check "Super Ju Jitsu" on coupon at bottom of this page and complete course will be rushed out to you AT ONCE.

Study SWEDISH BODY MASSAGE

Now available at low cost, this *course of instruction* in the Art of Body Massage and Hydrotherapy. Lessons are collected together in handy one-volume manual. Contains interesting information on the fundamentals of anatomy, physiology, procedure for complete massage, approved exercises, etc. Includes business details. Easy to read—simple to understand. This study may open the door to a basic knowledge of the profession. Excellently illustrated throughout; step-by-step explanations with diagrams. Complete, only $6.95 postpaid. Money-back guarantee. Check "Swedish Body Massage" and mail coupon at bottom of this page TODAY!

JEWELERS & WATCHMAKERS CYCLOPEDIA. Packed with trade secrets, manufacturing processes, little-known formulas, etc., for opticians, stone setters, engravers, case makers, horologists, photographers and others. 1001 money making ideas for the practical man! Only $1.69.

HOW TO BUY & SELL OLD GOLD, ETC. A new to-the-point Technical Bulletin to teach you how to make money dealing in precious metals—broken jewelry, old gold, silver, platinum, etc. Enormous opportunities for those with experience. Only $1.00.

PIANO TUNING

Study a Dignified, Steady Profession That Pays Well — Offers Regular Repeat Business

Experienced piano tuners charge about $7.50 for a job they can finish in one hour! You can start training for this money-making field right now. It is NOT necessary that you play the piano . . . you don't even have to understand music at all.

SELF-INSTRUCTION COURSE—ONLY $3.95, COMPLETE PRICE. This excellent home-study course includes instructions on piano regulating, repairing and other servicing operations every good piano tuner should know. Also covers electric organs, tuning by Stroboscope, etc. Good, clear, helpful illustrations to guide you step by step. Satisfaction or refund guaranteed. Order "Piano Tuning" today. Mail coupon at bottom of page now.

CIVIL SERVICE GOV'T JOBS

Looking for a government job? (Federal, State, City.) Or a job with some big industrial or business organization? Or work in an institution? Then you NEED this complete "Practice Tests for All Jobs." Explains in detail how intelligence tests and aptitude tests are given—how they are used for hiring, classifying, assigning and promoting—and how they should be handled for best results. Shows you what the tests are like, gives you a very definite idea of the kind of questions you will be asked, tells you what you have to know, how to get a top mark. Contains practice materials, study outlines, sample tests, etc. For anyone interested in mental self-improvement! Full price *only $3.95.* Check "Civil Service" on No-Risk Coupon below. Satisfaction or refund guaranteed.

How to be a BARTENDER and the Art of Mixing Drinks

Professional information for the liquor trade and man-about-town. Details on mixing and serving 300 most popular drinks. Practical instruction for working behind the bar. How to handle and use spirits, wines, beers. *Trade secrets* on the care of bottles, glassware, mirrors, utensils. How to make syrups, bottle in bulk, prepare fruit. Excellent illustrations. Also includes appropriate toasts for good fellows. *COMPLETE, ONLY $1.49.* Satisfaction guaranteed or refund. Check "Bartender" in coupon below.

FREE!

10 DAY TRIAL OFFER

"HOW TO GET ALONG IN THIS WORLD"

Boiled-down tips on SUCCESS! Here, gathered together for the first time, are 5,000 gems of worldly wisdom on how to live joyously, successfully . . . how to handle people, make money, be happy. Written out of actual experience by the best brains of mankind . . . during the past four thousand years! To-the-point, workable instructions on the practical art of getting ahead. Included are lessons on HOW TO USE these quotations in your daily life.

You are entitled to examine for 10 days any material listed on this page before you decide to keep it. We guarantee to refund every penny of your deposit if you decide to return your texts after inspection.

PICK YOUR OPPORTUNITY

How to Order. In coupon to the right check the courses you want us to send you. Print your name and full address clearly, then mail coupon right away. Send full payment with your order and we'll pay all postage charges—on C.O.D. shipments you pay charges.

BE A SUCCESS

THE AMAZING volume briefly described above (How to Get Along in This World) will be included in your shipment without any charge if your order calls for two or more of the items listed on this page. This wonderful text is yours to keep permanently, even should you send back for refund the courses you order. We reserve the right to withdraw this offer when our present limited stock is gone. Don't lose out—mail coupon today!

Satisfaction Guaranteed or Your Money Back
NELSON-HALL COMPANY (Established 1909)
210 S. Clinton St., Dept. JY-1, Chicago 6, Ill.

MAIL THIS NO-RISK COUPON TODAY!

NELSON-HALL CO., 210 S. Clinton St., Dept. JY-1, Chicago 6, Ill.

Please rush me the practical courses I am checking below. I understand each is complete and this is the full price. I have the right to examine everything you send me for 10 full days. Then if I am not more than satisfied I will return the material and you guarantee to make complete immediate refund, without question or quibble.

( ) Locksmithing Course $4.95
( ) Watch & Clock Repairing 4.95
( ) Practical Radio Servicing 3.95
( ) Real Estate Business 6.95
( ) Refrigeration 4.95
( ) Insurance Business 6.95
( ) Apartment House Management 5.95
( ) Writing For Money Course 5.95
( ) Better English $2.89
( ) Short-Cut Mathematics 1.95
( ) Build It Yourself.... 1.98
( ) Blueprint Reading Course 6.95
( ) Physical Therapy.... 4.95
( ) Physical Culture Course 4.98
( ) How to Run a Farm 2.69
( ) Complete Shorthand Course 4.95
( ) Practical Accounting 4.95
( ) Sing For Money..... $3.85
( ) Voice Development.... 1.95
( ) Hypnotism Course.... 2.95
( ) Mental Science..... 6.95
( ) Super Ju Jitsu..... 4.95
( ) Swedish Body Massage,..... 6.95
( ) Jewelers' Cyclopedia..... 1.69
( ) Buy and Sell Old Gold, etc..... 1.00
( ) Piano Tuning..... 3.95
( ) Civil Service..... 3.95
( ) Bartender..... 1.49

☐ I enclose $..... in full payment. Ship entirely postpaid.
☐ Ship C.O.D. for $..... plus postage.

NAME.....

ADDRESS.....

CITY..... STATE.....

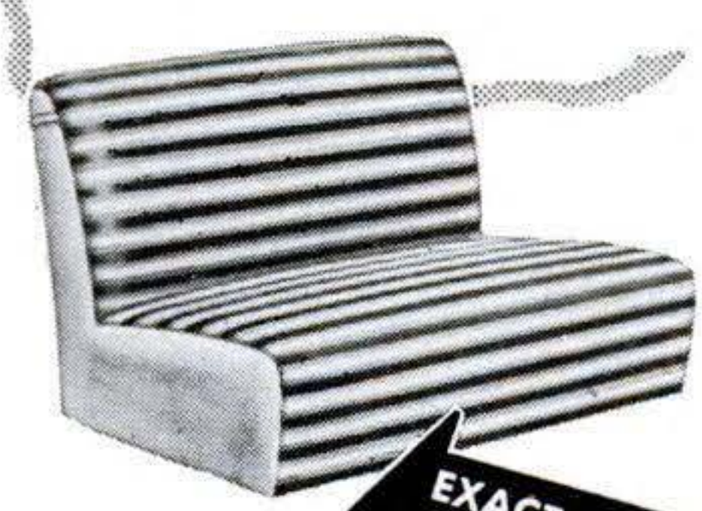
☐ Check here if above order is for two or more items. In this case we send you, without extra charge, a copy of HOW TO GET ALONG IN THIS WORLD—big 160-page volume. This most unusual text is yours to keep, even if you return the courses after inspection. Mail this coupon NOW—this offer subject to cancellation when our present limited stock runs out.

Copyrighted material

Save UP TO 50%

WITH THIS SENSATIONAL

AUTO SEAT COVER *Bargain!*



EXACT COPY OF $50 PATTERN!

New *Candy Stripe* AUTO SEAT COVERS

FITS ALL CARS

$2.95 FRONT ONLY

FRONT & REAR $5

Now, at last, you can have the **smartest seat covers** to protect your upholstery and add distinction to your car at sensational **low cost.** Tailored of miracle plastic in luxurious **candy stripe design.** Choice of 4 rich looking color combinations . . red, gray, blue, or green. New snap on action holds them tight. **FITS ALL CARS.** Color-fast! Can't fade or shrink. Waterproof, stainproof, greaseproof. Resists burns. Cleans easily with a damp cloth.

Give year and make of car, 2-door, 4-door or coupe.

TRY IN YOUR CAR AT OUR RISK!

SEND NO MONEY

MAIL THIS COUPON NOW!

YOUNG PRODUCTS
DEPT. 592
2605 ELMHURST, DETROIT 6, MICH.

Please rush Seat Covers as follows:

☐ 2-Dr. ☐ 4-Dr. ☐ Coupe ☐ RED ☐ GREEN ☐ BLUE ☐ GRAY

Make of car.....

☐ Front Only $2.95 ☐ Front & Rear $5

If I am not delighted I may return item within 10 days for full refund of purchase price

NAME.....

ADDRESS.....

CITY.....STATE.....

☐ Send item listed. I will pay postman plus postage.

☐ I want to save postage. I am enclosing full payment. Same money back guarantee applies.

New WRIST WATCH WITH AMAZING MECHANICAL BRAIN

- It "Remembers"
- It Tells Time
- It Tells Date

COMPARE IT AT $50

$8.95 PLUS 90c FED. TAX

Included **FULL YEAR GUARANTEE** And Lifetime Service Certificate

Measures Speed. Measures Distance. Records up to 12 Hours. OVER 40 QUALITY FEATURES. Precision Jeweled. Imported Swiss Movement. Accurate. Dependable.

Push-Button Stop & Start. Red Sweep-Second Hand. Unbreakable Crystal. Triple Chrome Plated Case. Shock Resistant. **NITE-VUE RADIUM GLOW DIAL.** Anti-Magnetic. Times Shop work. Times Photography. Times Sports. Times Races. Times Lab. work. Times Planes Smart Expansion Band Included.

FREE 10 DAY TRIAL

SEND NO MONEY

ACT NOW • MAIL COUPON!

YOUNG PRODUCTS
DEPT 592
2605 ELMHURST, DETROIT 6, MICH.

Please rush MECHANICAL BRAIN WRIST WATCH @ $8.95 plus 90c Fed. Tax

If I am not delighted I may return item within 10 days for full refund of purchase price.

NAME.....

ADDRESS.....

CITY.....STATE.....

☐ Send item listed. I will pay postman plus postage.

☐ I want to save postage. I am enclosing full payment. Same money back guarantee applies.

New . . . Unique ELECTRONIC WALKIE-TALKIE

Communication System

NO BATTERIES

NO PLUG-IN

Complete 2 UNIT SET

$3.95 LIMITED OFFER

FREE 10 DAY TRIAL

Perfect for room to room, house to garage, etc. No batteries, no tubes. Complete two way telephone system. Works at amazingly long distances. Handy pocket size. Electronic voice powered. No license or permit needed. **Two units complete with wire, ready to use.** Quantity limited. Order today.

WHAT A BUY!

SEND NO MONEY

RUSH COUPON TODAY!

YOUNG PRODUCTS
DEPT 592
2605 ELMHURST, DETROIT 6, MICH.

Please rush WALKIE TALKIE COMMUNICATION SYSTEM at Bargain Price of $3.95.

If I am not delighted I may return item within 10 days for full refund of purchase price.

NAME.....

ADDRESS.....

CITY.....STATE.....

☐ Send item listed. I will pay postman plus postage.

☐ I want to save postage. I am enclosing full payment. Same money back guarantee applies.

Copyrighted material

Letters

It Looks Simple, but Isn't

In your article on the '52 Olds (June, p. 89), Wilbur Shaw mentions the past experiments made with polarizing lenses to cut headlight glare. Why was this scheme never adopted?

O. F. LARSEN, Milwaukee.

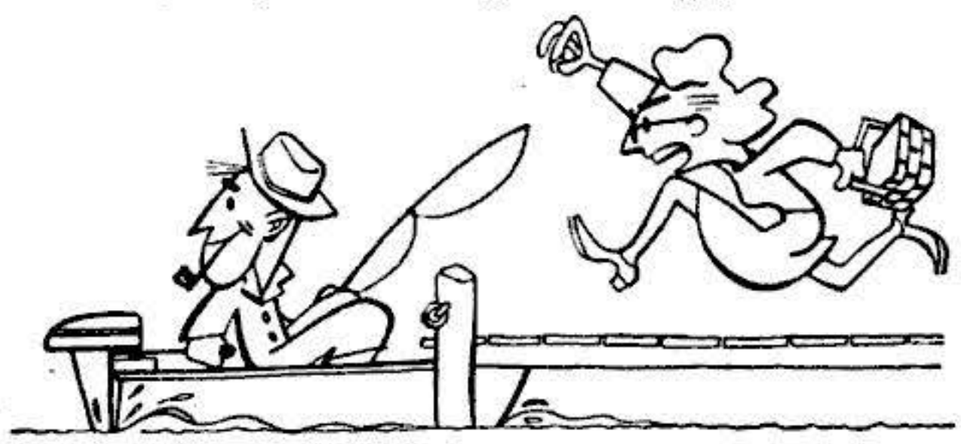
The use of polarizing glass has been studied for years. The auto industry has held off, however, on the grounds that:

1. *Lamps six times as bright as present ones would be needed, requiring a generator twice as big, because of the large amount of light absorbed by the glass.*
2. *Special lamps would have to be added for city driving because pedestrians would not have viewers to shield them from the increased brightness of the lights.*
3. *The warning glow of an oncoming car around a corner or over a hilltop would be absent, adding to driving hazards.*
4. *All cars would have to be equipped simultaneously, or those not equipped would be blinded by the extra-bright headlights of those that were.*

Outboards Challenge Inboards

Robert J. Whittier's fine article "Now You Too Can Own a Yacht" [July '52, p. 96] makes a strong case for "egg-beater" yachtsmen, but he left out one major selling point concerning outboard cruising.

Perhaps the greatest impetus behind the growing popularity of outboard boating is the comparatively recent development of gearshift motors. These power plants are erasing most boatmen's prime objection to outboard motors—namely, the lack of maneuverability—by enabling the skipper to warm



up his engine in neutral, back out of slips, and brake forward speed through reverse shifting.

LORNE S. WADDELL, Hagerstown, Md.

Long-Range TV

I have just read your article "Kansas TV Fan Gets Both Coasts" in the July issue [p. 171].

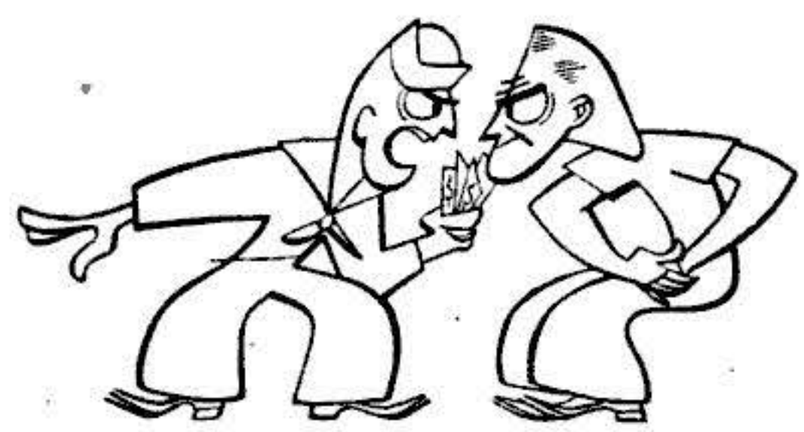
Here in Orlando, Fla., we get some pretty distant stations, too. We have a DuMont Westminster set with a 21-inch screen, two boosters, and an aerial that is 40 feet up. At various times, we have gotten Baltimore, Boston, Chicago, Cleveland, Columbus, Dallas, Detroit, Kalamazoo, Milwaukee, New York, Oklahoma City, Omaha, and Pittsburgh.

One interesting point is that the person from Kansas says that the best time for freak reception is "10 p.m. to midnight." Most of the cities mentioned above were received during the late morning and early afternoon.

JOEL G. KAPLAN, Orlando, Fla.

Help Wanted

I need some help—but fast. We have been arguing recently over the Tucker car, and a fellow bet me $40 to my $1 that no Tucker



ever ran and that, if it did, it did not have a Tucker engine but used a Duesenberg.

I maintain that a Tucker did run and that it had its own engine. I am about to get engaged and can use the money.

PH 3 STEWART D. RUSBY, USN
% FPO, NYC.

You can collect that $40. A Tucker car was driven in 1948 before an audience of newspaper men in Detroit. It was powered by its own air-cooled, six-cylinder engine. This engine was developed by Air Cooled Motors of Syracuse, N.Y. Preston Tucker bought the engine factory from Republic Aviation. Legally, therefore, it was a Tucker engine.

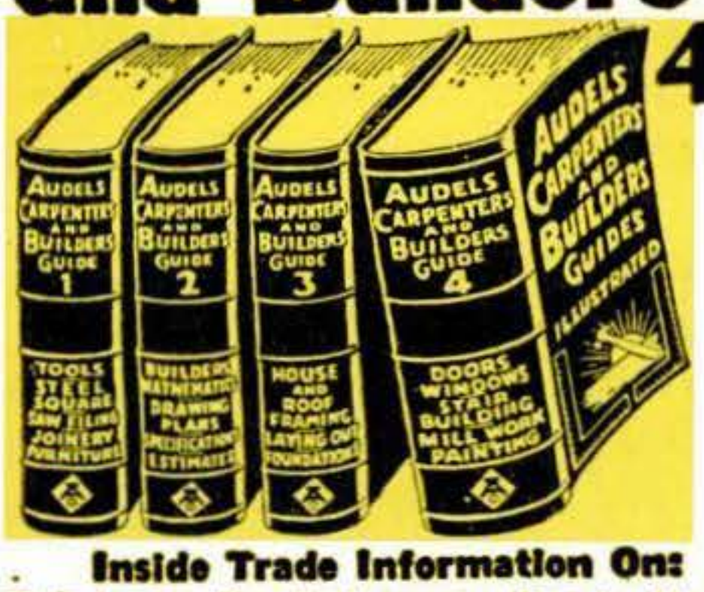
But Who'll Dim His Lights?

I was very pleased with the amusing little story on page 190 of the July issue showing the Rube Goldbergish electronic match lighter. I take it as a sort of satire on the complexities of modern living.

The first thing it brought to mind was

Copyrighted material

AUDELS Carpenters and Builders Guides



4 vols. $6

Inside Trade Information for Carpenters, Builders, Joiners, Building Mechanics and all Woodworkers. These Guides give you the short-cut instructions that you want—including new methods, ideas, solutions, plans, systems and money saving suggestions. An easy progressive course for the apprentice and student. A practical daily helper and Quick Reference for the master worker. Carpenters everywhere are using these Guides as a Helping Hand to Easier Work, Better Work and Better Pay. To get this assistance for yourself, simply fill in and mail the FREE COUPON below.

Inside Trade Information On:

How to use the steel square—How to file and set saws—How to build furniture—How to use a mitre box—How to use the chalk line—How to use rules and scales—How to make joints—Carpenters arithmetic—Solving mensuration problems—Estimating strength of timbers—How to set girders and sills—How to frame houses and roofs—How to estimate costs—How to build houses, barns, garages, bungalows, etc.—How to read and draw plans—Drawing up specifications—How to excavate—How to use settings 12, 13 and 17 on the steel square—How to build hoists and scaffolds—skylights—How to build stairs—How to put on interior trim—How to hang doors—How to lath—lay floors—How to paint.

AUDEL, Publishers, 49 W. 23rd St., New York 10, N. Y.

Mail Audels Carpenters and Builders Guides, 4 vols., on 7 days free trial. If OK I will remit $1 in 7 days and $1 monthly until $6 is paid. Otherwise I will return them. No obligation unless I am satisfied.

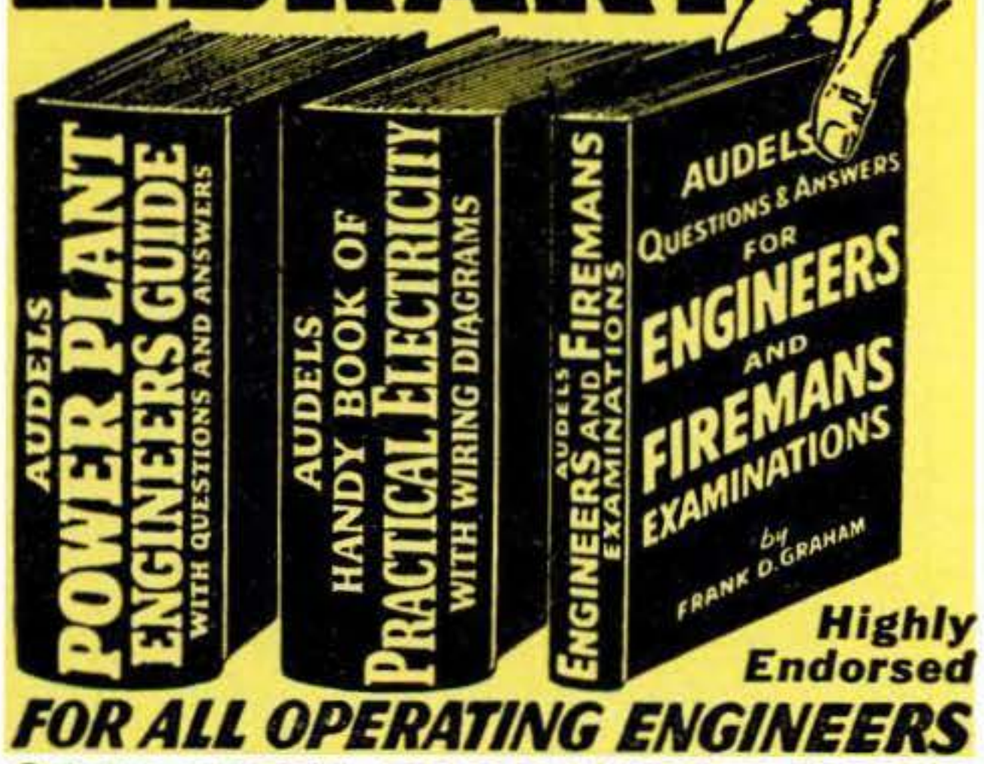
Name_____

Address_____

Occupation_____

Employed by_____ S9

ENGINEERS LIBRARY



Highly Endorsed

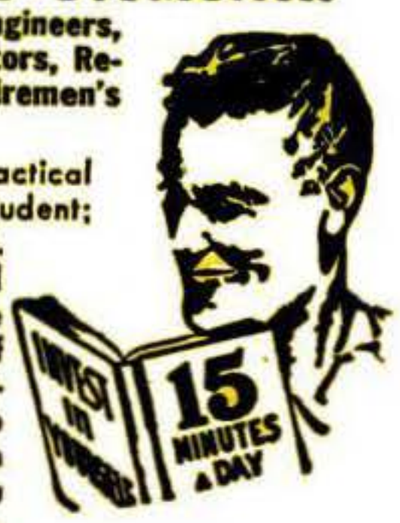
FOR ALL OPERATING ENGINEERS

3500 PAGES • 5000 ILLUSTRATIONS

$9 COMPLETE • PAYABLE $1 A MONTH

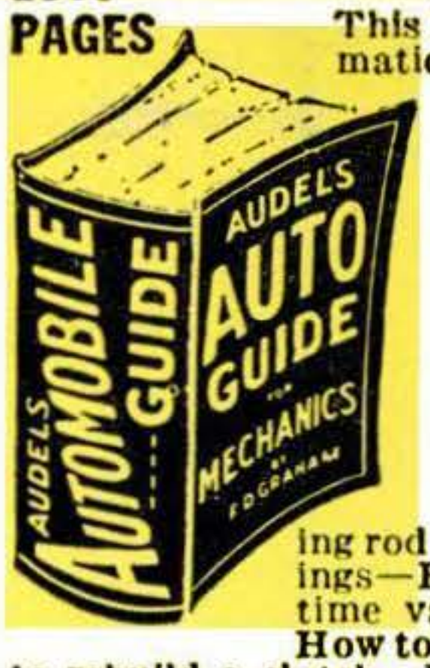
For all Stationary, Steam, Diesel and Hoisting Engineers, Firemen, Water Tenders, Oilers, Boiler Operators, Repair Men and Applicants for Engineer's and Firemen's License Examinations.

THIS MASTER SET is a Gold Mine of Daily, Practical Help. A Self-Educating Study Course for the student; or a standard reference work for the chief. Thousands of rules, tables, calculations and diagrams make it easy to read and learn. Late inside information on theory and practice of modern engineering for reference study and review. Thousands of short-cuts that make the job easier. Examine free! Pay $1. a month (less than 4c. a day) if satisfied that this set will help you to a better job—or make your present job easier.



WHAT ALL AUTO MECHANICS WANT TO KNOW

1800 PAGES



This Big Practical Book gives full information with working diagrams covering the principles, construction, ignition, service and repair of modern cars, trucks and buses.

Diesel Engines, Hydramatic & Fluid Drives Fully Explained.

A complete Guide of 1800 pages, with over 1500 illustrations showing inside views of working parts, with instructions for service jobs.

IT PAYS TO KNOW

How to fit pistons—How to locate engine knocks, How to fit connecting rod bearings—How to service main bearings—How to recondition valves—How to time valves—How to adjust fan belts—How to adjust carburetors and chokes, How to rebuild a clutch—How to service automatic transmissions—How to service brakes—How to adjust steering gear—How to cope with ignition troubles—How to service distributors—How to time ignition—How to "tune up" an engine.

$4 COMPLETE • PAY $1 A MO.

TO GET THIS ASSISTANCE FOR YOURSELF SIMPLY FILL IN AND MAIL COUPON TODAY.

Step up your own skill with the facts and figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in a Handy Form. Fully illustrated and Easy to Understand. Highly Endorsed. Check the book you want for 7 DAYS FREE EXAMINATION. Send No Money. Nothing to pay postman.

MAIL ORDER

AUDEL, Publishers, 49 W. 23 St., NEW YORK 10, N. Y.

Please send me postpaid for FREE EXAMINATION books marked (x) below. If I decide to keep them I agree to mail $1 in 7 Days on each book or set ordered and further mail $1 monthly on each book or set until I have paid price, otherwise I will return them.

Check NOW!

You Can Look Over Any Guide In Your Own Home — Start the Easy Payments If Satisfied

MAIL THIS TODAY

- ☐ AUTOMOBILE MECHANICS GUIDE, 1800 Pages $ 4
- ☐ TRUCK & TRACTOR GUIDE, 1299 Pages . . . 4
- ☐ DIESEL ENGINE MANUAL, 575 Pages 2
- ☐ MACHINISTS HANDY BOOK, 1650 Pages . . . 4
- ☐ WELDERS GUIDE, 400 Pages 1
- ☐ BLUE PRINT READING, 416 Pages 2
- ☐ MATHEMATICS & CALCULATIONS, 700 Pages. 2
- ☐ SHEET METAL PATTERN LAYOUTS, 1100 Pages 4
- ☐ SHEET METAL WORKERS HANDY BOOK, 388 Pgs. 1
- ☐ MECHANICAL DRAWING GUIDE, 160 Pages . . 1
- ☐ MECHANICAL DRAWING & DESIGN. 480 Pages 2
- ☐ AIRCRAFT WORKER, 240 Pages 1
- ☐ TELEVISION SERVICE MANUAL, 384 Pages . . 2
- ☐ RADIOMANS GUIDE, 914 Pages 4
- ☐ ELECTRONIC DEVICES, 216 Pages 2
- ☐ ELECTRIC MOTOR GUIDE, 1000 Pages 4
- ☐ ELECTRIC WIRING DIAGRAMS, 272 Pages . . 1
- ☐ ELECTRICIANS EXAMINATIONS, 250 Pages. . 1
- ☐ ELECTRIC POWER CALCULATIONS, 425 Pages. 2
- ☐ HANDY BOOK OF ELECTRICITY, 1440 Pages. . 4
- ☐ ELECTRIC DICTIONARY, 9000 Terms 2
- ☐ ELECTRIC LIBRARY, 7000 Pages (12 Book Set) 18
- ☐ MARINE ENGINEERS HANDY BOOK, 1258 Pgs. 4
- ☐ SHIPFITTERS HANDY BOOK, 250 Pages . . . 1
- ☐ REFRIGERATION & Air Conditioning, 1280 Pgs. 4
- ☐ MILLWRIGHTS & MECHANICS GUIDE, 1200 Pgs. 4
- ☐ POWER PLANT ENGINEERS GUIDE, 1500 Pages 4
- ☐ ENGINEERS & FIREMANS EXAMS, 525 Pages . 1
- ☐ PUMPS, Hydraulics & Air Compressors, 1658 Pgs. 4
- ☐ ENGINEERS LIBRARY (3 Book Set) 9
- ☐ MECHANICAL DICTIONARY, 950 Pages 4
- ☐ GARDENERS & GROWERS GUIDES (4 Book Set) 6
- ☐ CARPENTERS & BUILDERS GUIDES (4 Book Set) 6
- ☐ PLUMBERS & Steamfitters Guides (4 Book Set) 6
- ☐ MASONS AND BUILDERS GUIDES (4 Book Set) 6
- ☐ PAINTERS & DECORATORS MANUAL, 450 Pgs. 2
- ☐ HOUSE HEATING GUIDE, 1000 Pages 4
- ☐ OIL BURNER GUIDE, 384 Pages 1

Name_____

Address_____

Occupation_____ S9

Employed by_____

Copyrighted material

Save by INSULATING

EARN DIVIDENDS OF COMFORT

GET THE FACTS *on which insulation materials will meet your exact needs.*

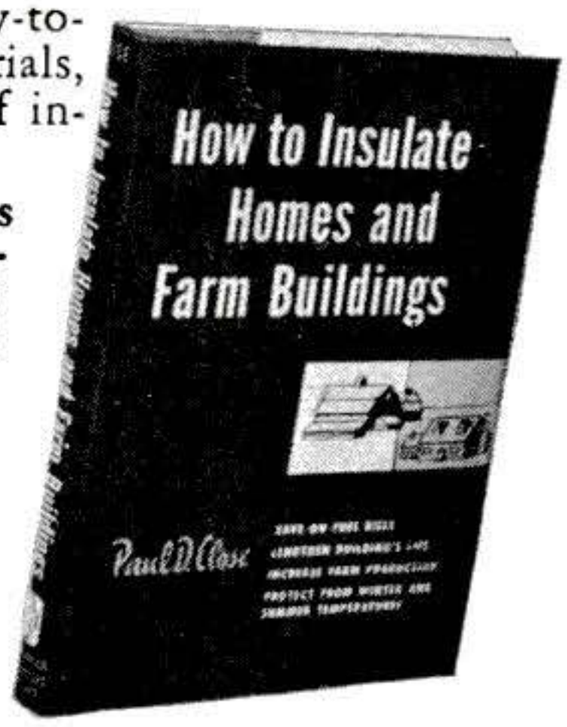
SEE HOW *you can do the work efficiently and economically, without professional help.*

We're talking to you, Mr. Home-Owner—and Mr. Farmer. With this new guide, you select the insulation that gives you maximum fuel savings and greatest protection from summer heat. What's more, you realize additional savings by using this book to show you how to do the job yourself!

You furnish the ambition—

we furnish the know-how.

More than 160 insulation products are on the market today, each designed to meet a different need. This impartial guide—not a collection of manufacturers' pamphlets—tells you exactly which are best suited for your purpose. Here is a goldmine of information for everyone faced with mounting fuel costs in winter, and unbearable hot-house conditions in the summer. It's jam-packed with easy-to-understand facts on materials, and simplified methods of installing them.



In more than 200 pages of step-by-step explanation, illustrated with 145 pictures, diagrams, and charts, this insulation guide . . .

- ✔ *explains the various types of insulation.*
- ✔ *tells which are best suited for each purpose.*
- ✔ *shows step-by-step method of installation.*
- ✔ *tells how to control temperature and humidity and reduce noise.*

7 DAYS FREE EXAMINATION **$3.00**

Mail this coupon today—7 days trial at no cost to you.

American Technical Society (Publishers since 1898)
Dept. I-620
848 East 58th Street, Chicago 37, Illinois

Please rush me the following books I'm checking below to examine at home. If I'm not convinced these books will help me save thousands of dollars by doing my own building and planning, I may return the books and owe nothing.

Examine at home at no cost

- ☐ HOW TO INSULATE HOMES AND FARM BUILDINGS $3.00
- ☐ Concrete Block Construction For Home and Farm..... 2.75
- ☐ Carpentry..... 2.50
- ☐ How To Design and Install Plumbing..... 3.95
- ☐ Painting and Decorating..... 1.75
- ☐ Electric Wiring—Residential and Farm..... 3.95
- ☐ How To Insulate Home and Farm Buildings..... 3.00
- ☐ Bricklaying—Skill and Practice..... 3.00
- ☐ Steel Square..... 2.25

*Name*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

☐ Ten-day no-cost trial. If I keep books, will remit by check or money order.
☐ Send C.O.D. Same return privilege—money refunded.
☐ I'm enclosing $.....now to save postage—same return privilege—money refunded.

General Motors' Autronic-Eye, which Wilbur Shaw discussed in the June issue [p. 89]. Now this gadget, in its own way of simplifying driving, gives us not one but two buttons to find and distinguish with our otherwise vestigial left foot. How far can simplification go?

It seems to me that paying over $50 for a gadget that dims *my* lights is a waste of money. What *would* be worth $50 is something that would dim the *other* guy's lights.

PFC. GEORGE R. KORNFELD
Sacramento Signal Depot, Calif.

Gears on Grades

We were touring through New Hampshire in our new car, and my wife decided she wanted to take the toll road up Mt. Washington. But when the people at the

tollhouse saw we had an automatic transmission, they refused to let us climb.

What kind of jokers are these Detroit engineers? They make you pay extra for an automatic drive, and never whisper a word about how it isn't as good as a gearbox at getting you up steep grades.

JIM MCNABB, Boston.

The difficulty is going down, not up. The Mt. Washington Summit Road Co. says that automatic-shift cars don't have trouble climbing the mountain but that some—makes unspecified—do not have enough compression drag for the descent. The toll road has a steady grade averaging 12 percent over its eight-mile length. Without plenty of engine drag to help, brakes on a descending car are likely to overheat and burn out.

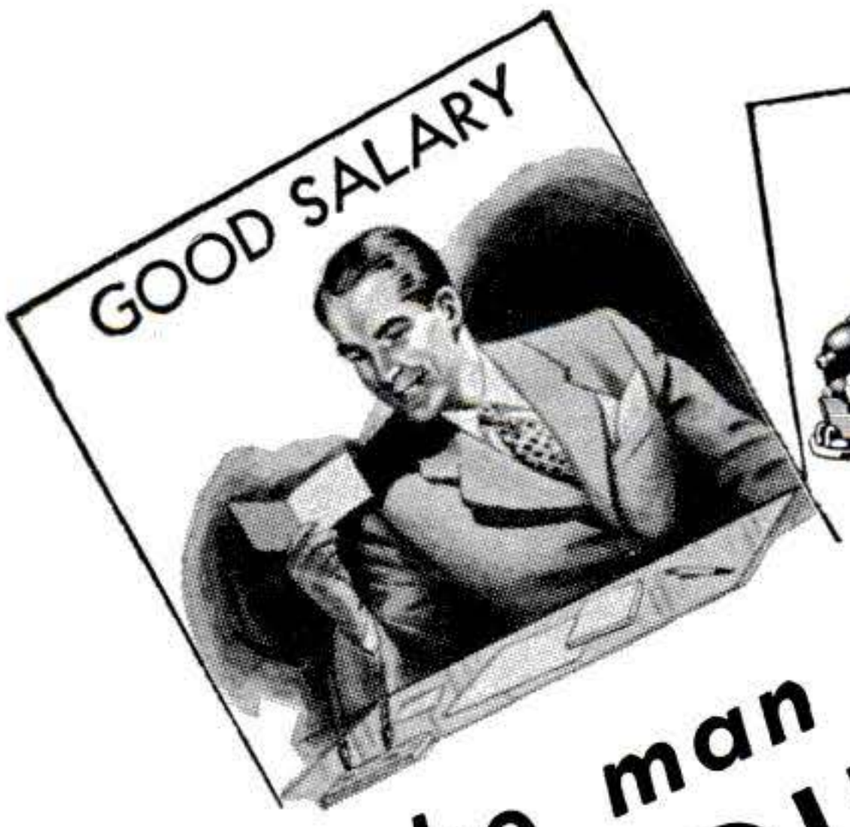
The restriction isn't new; about 40 years ago Model T Fords were also barred.

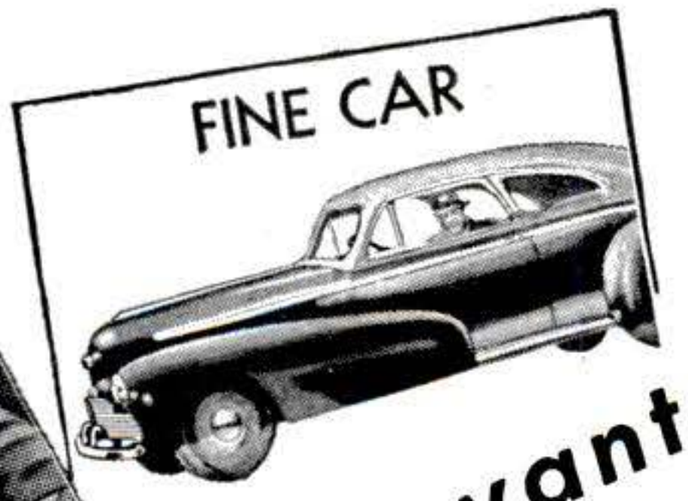
Tip on Undercoating

Readers who undercoat their own cars should be very careful to keep the material off the propeller shaft, also the fan if they coat the underside of the hood. Undercoating on either the shaft or fan may cause noticeable vibration.

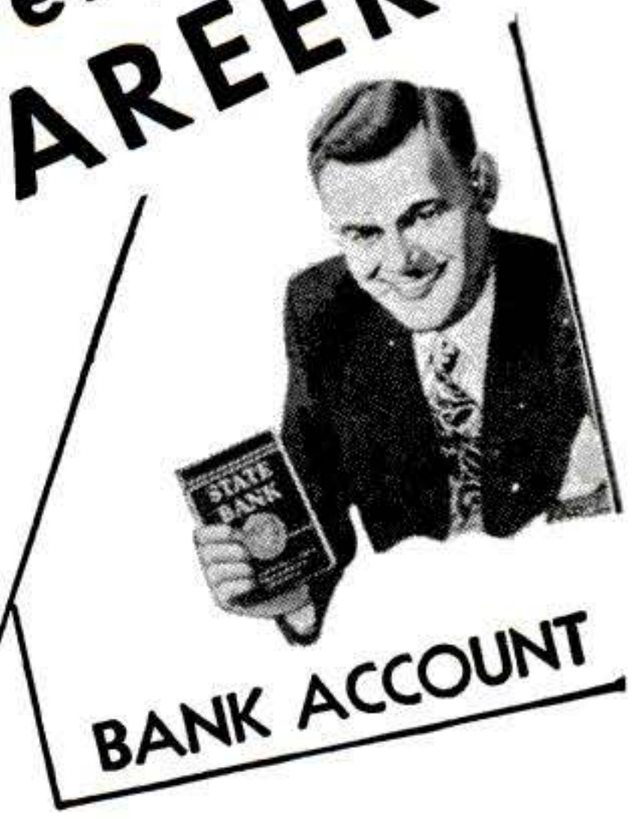
PETER HARRIS, Chicago

Copyrighted material





To the man who wants to enjoy an ACCOUNTANT'S CAREER



IF you're that man, here's something that will interest you.

Not a magic formula—not a get-rich-quick scheme—but something more substantial, more practical.

Of course, you need something more than just the desire to be an accountant. You've got to pay the price—be willing to study earnestly, thoroughly.

Still, wouldn't it be worth your while to sacrifice some of your leisure in favor of interesting home study—over a comparatively brief period? Always provided that the rewards were good—a salary of $4,000 to $10,000?

An accountant's duties are interesting, varied and of real worth to his employers. He has *standing!*

Do you feel that such things aren't for you? Well, don't be too sure. Very possibly they *can* be!

Why not, like so many before you, investigate LaSalle's modern Problem Method of training for an accountancy position?

Just suppose you were permitted to work in a large accounting house under the personal supervision of an expert accountant. Suppose, with his aid, you studied accounting principles and solved problems day by day—easy ones at first—then more difficult ones. If you could do this—and could turn to him for advice as the problems became complex — soon you'd master them all.

That's the training you follow in principle under the LaSalle Problem Method.

Over 3500 Certified Public Accountants among LaSalle alumni

You cover accountancy from the basic Principles right up through Accountancy Systems and Income Tax Procedure. Then you add C. P. A. Training and prepare for the C. P. A. examinations.

As you go along, you absorb the principles of Auditing, Cost Accounting, Business Law, Statistical Control, Organization, Management and Finance.

Your progress is as speedy as you care to make it—depending on your own eagerness to learn and the time you spend in study.

Will recognition come? The only answer, as you know, is that success *does* come to the man who is really *trained*. It's possible your employers will notice your improvement in a very few weeks or months. Indeed, many LaSalle graduates have paid for their training—with increased earnings—before they have completed it! For accountants, who are trained in organization and management, are the executives of the future.

Write For This Free Book

For your own good, don't put off investigation of *all* the facts. Write for our free 48-page book, "Accountancy, The Profession That Pays." It'll prove that accountancy offers brilliant futures to those who aren't afraid of serious home study. We'll also include "Ten Years' Promotion in One"—a book which has helped many men. Send us the coupon *now*.

Other LaSalle Opportunities

- ☐ Higher Accountancy
- ☐ C.P.A. Coaching
- ☐ Bookkeeping
- ☐ Law: LL.B. Degree
- ☐ Business Management
- ☐ Salesmanship
- ☐ Traffic Management
- ☐ Foremanship
- ☐ Industr'l Management
- ☐ Stenotypy (Machine Shorthand)

LASALLE EXTENSION UNIVERSITY
A CORRESPONDENCE INSTITUTION

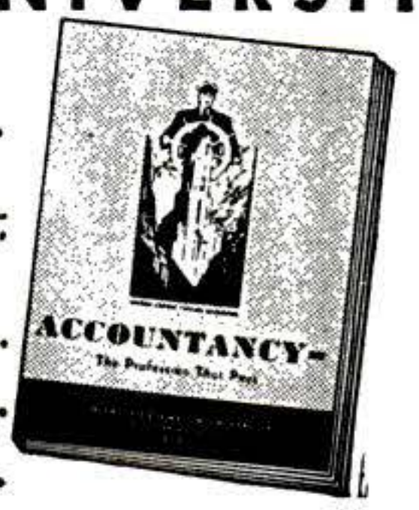
417 S. Dearborn St. Dept. 983HR Chicago 5, Ill.

I want to be an accountant. Send me without obligation, "Accountancy, the Profession that Pays"—also "Ten Years' Promotion in One."

Name.....*Age*.....

Address.....

City, Zone & State.....



Copyrighted material

Men, can your hair pass the caress test?

Grooms hair, never greases it

The proof is in the palm of your hand!

20% more for your money!

Using a hair tonic now? Then try this simple test. Rub your hand across your hair—just as she might do tonight! Does your palm pick up a sticky film of oil or grease? If it does—switch to Mennen Cream Hair Tonic—it's lightly-blended—grooms the hair but leaves no trace! Contains Lanolin. Helps remove dandruff scales and relieves dry scalp. Get your first bottle today—pass the caress test tonight!

MENNEN

Cream Hair Oil **FOR MEN**

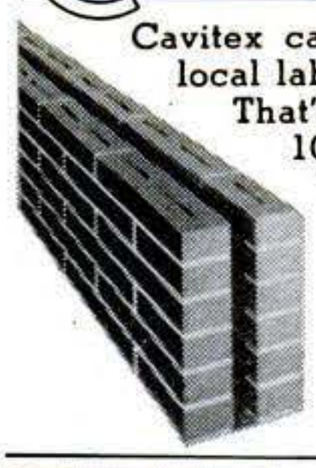
473 MEN WANTED

As Local Manufacturers of this New Masonry

CAVITEX is today's masonry—colorful, streamlined, scientific. Yet with price appeal to override competition. Size and proportion in direct line with modern architectural trends. Dimensions strictly according to modular standards. All the strength, safety and endurance of masonry at its peak point.

Outstanding Opportunities For Responsible Operators

CAVITEX



Cavitex can be made locally—of local materials with local labor. Freight and distribution costs are saved. That's why Cavitex can be sold so low, yet still allow 100% or more mark-up on material and labor. We supply basic equipment on easy rental terms. Exclusive privileges in franchise-protected territories. Hundreds of territories open. Write or wire today for "Opportunity, Unlimited"—free. If requested, we will tentatively reserve territory desired.

W. E. DUNN MFG. CO., 410 W. 24th St., Holland, Mich.

HYPNOTIZE

Yes. Anyone. Modern speed hypnotism taught. Methods revealed. You are shown exactly what to say and do. Photo illustrated. Many interesting experiments. Self-hypnosis is fully explained. Amazing results. Detailed hypnotic tests given. Learn this exciting fascinating art. Hold your friends absolutely spellbound. Entertain. *A professional hypnotist tells you his secrets.*

Free catalog of new hypnotism books sent on request.

Send for the startling book "HYPNOTISM REVEALED" → **$1**

78 RPM Phonograph Record Inducing Self-Hypnosis & Group-Hypnotism → **$5**

Thought of using sleep for learning, self-development? Send for new intriguing book, "Mental Power Through Sleep Suggestion." → **$1**

These two books are also available at all bookstores and public libraries.

MELVIN POWERS, Master Hypnotist, 1324 Wilshire, Dept. 93 Hollywood 17, Calif.

FREE 226 STAMPS

Including Famous Berlin Bear Stamp—used by Russians as propaganda to show "The Russian Bear" rebuilding Berlin. We'll also include 225 other stamps—all DIFFERENT—ALL FREE—to introduce our special bargain approvals. PLUS a FREE copy of our helpful, informative book, "How to Collect Stamps." Supply limited—so rush name, address, and 10c to help cover postage and handling to:

LITTLETON STAMP CO., Dept. PS-9, Littleton, N. H.

"How to MAKE MONEY with Simple CARTOONS"

A book everyone who likes to draw should have. It is free; no obligation. Simply address

FREE BOOK

CARTOONISTS' EXCHANGE

Dept. 199-D Pleasant Hill, Ohio

★ WORK FOR UNCLE SAM ★

START AS HIGH AS $3,795.00 YEAR

Prepare NOW for next exams

MEN—WOMEN

Thousands appointments being made. 32-page Book FREE. Mail Coupon Today, SURE.

COUPON

FRANKLIN INSTITUTE
(Not Gov't Controlled)
Dept. M-80, Rochester 4, N. Y.

Sirs: Rush without charge, (1) 32-page book with list of U. S. Government Jobs; (2) Tell me how to qualify for one.

Name.....

Address.....Vet?.....

Copyrighted material

INVENTORS

Learn how to protect your invention. The U. S. Patent Laws provide that any new and useful art, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if the act of invention is involved. Therefore, every inventor with a valuable invention should take advantage of the Patent Laws and proceed for patent protection in order to safeguard his rights.

A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

CLARENCE A. O'BRIEN & HARVEY JACOBSON

Registered Patent Attorneys

22-J DISTRICT NATIONAL BUILDING

WASHINGTON 5, D. C.

Copyrighted material

BECOME AN Electrical Engineer

- **Major in Electronics or Power B. S. Degree in 36 months**
- **Television Technician Certificate in 18 months**

FOLLOW THIS PLAN
By 1954 there will be *at least* two positions for every engineering and technician graduate. Enter these opportunities early . . . earn your B. S. Degree in 36 months through optional year 'round study.

TELEVISION
TECHNICIANS are needed throughout America's fastest growing industry.
You become a Radio Technician in 12 months. In 6 additional months become a *Radio-Television Technician.* These Technician Courses are complete in themsevles and can be applied as *one-third* of the B. S. Degree program. Recent developments forecast unlimited opportunities for TV technicians and engineers.

Choose from these courses:
General preparatory course—3 months

SERVICE 6 months
- Electricity
- Welding
- Refrigeration
- Heating

TECHNICIAN 12 to 18 months
- Radio and Television
- Electronics
- Electrotechnics (Power)
- Mechanical Technician
- Welding
- Air Conditioning

ENGINEERING 36 months B.S. Degree
- Electrical Engineering Major in Electronics or Power
- Mechanical Engineering

TERMS OPEN OCTOBER, JANUARY, APRIL, JULY
Military, Practical, or Academic training evaluated for advanced credit. Faculty of specialists. Over 48,000 former students from all states and 23 overseas countries. *Nonprofit. Founded in 1903.*

MILWAUKEE SCHOOL OF ENGINEERING

MILWAUKEE SCHOOL OF ENGINEERING
Dept. PS-952, 1025 N. Milwaukee
Milwaukee 1, Wisconsin
Without obligation send Catalog for Electrical Engineering, B. S. Degree, major in ☐ Electronics; ☐ Power; ☐ "Your Career"; Occupational Guidance Bulletin on: ☐ Radio-TV ☐ Electrical Power ☐ Mechanical Engineering ☐ Welding ☐ Heating, Refrigeration, Air Conditioning ☐ Preparatory.

Name_____Age_____
Address_____
City_____Zone_____State_____
If veteran, indicate date of discharge_____

Famous 15 and 17 Jewel BULOVA WATCHES $16.95 PLUS TAX

PRACTICALLY WHOLESALE TO YOU

LIFETIME WRITTEN GUARANTEE

WERE UP TO $59.50 SAVE $42.55

Also Choice Of
- BENRUS
- GRUEN
- WALTHAM or
- ELGIN Watches

You get these unredeemed **LIFETIME GUARANTEED** Bulova and other movements in latest style Yellow Gold Cases at this sensationally low price because we bought out SURPLUS STOCKS of leading New York and Md. jewelers. Order now while they last. Specify make preferred and whether men's or ladies'. Only $16.95, plus $1.70 tax. Order right now.

Free Trial Offer! Wear At Our Risk!
Money back guarantee in 10 days if not delighted!

SEND ONLY $1 with order. Pay balance C.O.D. plus postage. Or we pay postage if you enclose $16.95 plus $1.70 tax.
FREE! Handsome Expansion band with orders.

Maryland Distributors, Dept. 398
501 E. Baltimore St., Baltimore 2, Md.,
Write for Free Watch and Diamond Ring Catalog—Practically Wholesale Prices.

Lifetime Guaranteed 17 Jewel Swiss WRIST WATCH
Worn by Army, Navy & Marines
Originally $59
$14.95 Plus $1.50 Tax
New Incablock, Shock-Protected
WATER-DUST PROOF

SURPLUS VALUES

SLEEPING BAG
Heavy weight, quilted. Mummy style. 9.95
ADD 35c FOR MAILING

HUNTING KNIFE
5¼" stainless steel blade. Leather sheath. 98¢
ADD 10c FOR MAILING

PARKA COAT 16.95
Warm, light weight quilted lining. Zipper and button front. Sizes 36 thru 46. ADD 35c FOR MAILING

SEND FOR FREE CATALOG

Money Back Guarantee

NATIONAL JOBBING CO.
1112 Howard St. Dept. S-9 Omaha, Nebr.

COULD YOU USE EXTRA MONEY?

Get $60.00 a Week for Only 3 Pair a Day!

It costs you nothing to have your own shoe business! Actual shoe samples supplied. Up to $4.00 cash for you per pair. Also cash bonus. Paid vacation. Tremendous variety styles, sizes for men, women, children. Exclusive magic comfort heel-to-toe cushion is selling dynamite. No experience or investment needed. Write TODAY for FREE 72 page Catalog and full information.

THE BIGGEST SELLER IN 31 YEARS

Heel to Toe Cushion

TANNERS SHOE CO., 120 Boston 10, Mass.

High School at Home

Many Finish in 2 Years

No classes. No time wasted going to and from school. Progress as fast as your time and abilities permit. Standard H. S. texts supplied. Thousands enroll each year in this 55-year-old school. Send for FREE descriptive booklet.

AMERICAN SCHOOL, Dept. H646
Drexel at 58th St., Chicago 37, Ill.
Without obligation, please send FREE descriptive booklet.

Name.....
Address.....

Copyrighted material

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are *your* laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

PATENTS • COPYRIGHTS • PATENTS

142-A VICTOR BUILDING, WASHINGTON 1, D. C.

Copyrighted material

You Can Influence Others With Your Thinking

TRY IT SOME TIME. Concentrate intently upon another person seated in a room with you, without his noticing it. Observe him gradually become restless and finally turn and look in your direction. Simple—yet it is a *positive demonstration* that thought generates a mental energy which can be projected from your mind to the consciousness of another. Do you realize how much of your success and happiness in life depend upon your influencing others? Is it not important to you to have others understand your point of view — to be receptive to your proposals?

How many times have you wished there were some way you could impress another favorably — *get across to him or her your ideas?* That thoughts can be transmitted, received, and understood by others is *now* scientifically demonstrable.

This FREE Book Points the Way

The tales of miraculous accomplishments of mind by the ancients are now known to be fact—not fable. The method whereby these things can be INTENTIONALLY, not accidentally, accomplished has been a secret long cherished by the Rosicrucians—one of the schools of ancient wisdom existing throughout the world. Write for the free copy of the fascinating sealed book, "THE MASTERY OF LIFE," which explains how you may receive this unique wisdom and benefit by its application. Address: Scribe I.A.S.

The ROSICRUCIANS
San Jose, (AMORC) California

USE THIS COUPON

Scribe I. A. S.
The Rosicrucians
San Jose, California

I am sincerely interested in an intelligent method of attaining a mastership of life. Send me without obligation, your FREE Book which explains how I may receive and use your age-old method.

Name.....
Address.....
City.....

No Experience Needed To
PRINT YOUR OWN POST CARDS

The GEM STENCIL DUPLICATOR saves money . . . gets results quickly! Hundreds of uses for every type of business and organization. We ship the GEM complete with all supplies, Guide Board for accurate printing and 60-page Book of Ideas at the special low price of only **$9.50** (a $15 value).

FREE TRIAL OFFER *Our 21st Year*

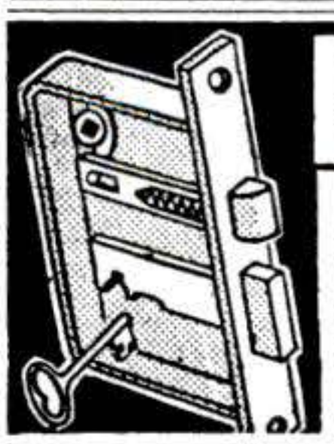
Use the GEM **FREE** at our expense! SEND NO MONEY. Write and complete GEM outfit will be sent you postpaid. After ten days, send us only **$9.50** or return the GEM. You must be satisfied!

BOND EQUIPMENT CO. **Dept. 151**
6633 Enright • St. Louis 5, Mo.

MONEY for MEN ALL DATA FREE

THE PLASTEX Industry needs manufacturers on small scale and for big production of Lamp and Clock Stands, Art Goods and Novelties in Plastex and Marble imitation. Experience unnecessary. ½c material makes regular 10c store sellers. Rubber moulds furnished for speed production. Small investment brings good returns. We are now placing big chain store orders with manufacturers. Ambitious men have chance for real prosperity. Our Free booklet will interest and benefit you.

PLASTEX INDUSTRIES, Dept. 2, 3400 Third Ave., New York 56, N. Y.



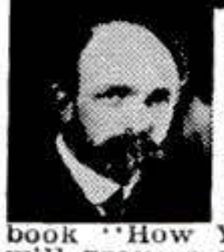
FIX LOCKS

Learn Locksmithing and Keymaking from Experts in Your Spare Time at Home!

Age or physical handicap no disadvantage. Year-round, steady income in this permanent, respected field. Full or part time. Practical, illustrated lessons show you how to make money even while learning! All materials and special tools supplied. Send for FREE BOOKLET.

LOCKSMITHING INSTITUTE, Dept. PS-33
15 Park Ave. Rutherford, N. J.
Lic. by State of N. J. *V.A. Approved*

New Way to Improve YOUR ENGLISH



A command of effective English gives you added advantages and better opportunities. Poor English handicaps you more than you will ever realize. You can improve your English through Sherwin Cody's 100% self-correcting invention.

If you are ever embarrassed by mistakes in grammar, spelling, punctuation, or pronunciation, this new free book "How You Can Master Good English in 15 Minutes a Day" will prove a revelation to you. Send for it **now**. It is free. No obligation. No agent will call. Address **SHERWIN CODY COURSE IN ENGLISH, 189 B & O Building, Rochester 14, N. Y.**

TRY HOME STUDY WATCHMAKING

Turn spare time hours to pleasure and profit. Master watch repairing the thrifty home study way. An exciting hobby or fascinating career. No experience needed. Send coupon today!

FREE Sample Lesson

CHICAGO SCHOOL OF WATCHMAKING
1608 N. MILWAUKEE AVE., DEPT. 492, CHICAGO 47, ILL.
SEND FREE SAMPLE HOME STUDY LESSON

Name.....
Address.....
City.....Zone.....State.....

Copyrighted material

Now IN YOUR OWN HOME *Learn* TELEVISION RADIO

the Amazingly Effective **D.T.I. WAY**

Above: Work over **300** fascinating experiments with this equipment

You KEEP all test equipment

1. Build over 300 fascinating experiments from 16 BIG SHIPMENTS of Electronic-Radio parts which you KEEP.

2. Build valuable commercial-type test equipment—as shown to the left—which you KEEP. This includes a quality OSCILLOSCOPE—a must for Television work.

3. Use a 16 mm. movie projector and new series of Hollywood produced instructive movies—a wonderful aid to help you grasp important fundamentals faster...easier...better.

4. Enjoy well-illustrated, easy-to-read lessons with handy FOLD-OUT diagrams.

5. Get an honest-to-goodness EMPLOYMENT SERVICE to help you get a good job after graduating—or assistance in starting your OWN SALES AND SERVICE BUSINESS. Mail coupon today for the complete details.

—with the aid of BOTH HOME EQUIPMENT and HOME MOVIES

What will mailing the coupon below *do for YOU?* Just this! You'll find out about one of today's most remarkable . . . practical ways to prepare to get into America's amazing billion dollar opportunity field of TELEVISION-RADIO-ELECTRONICS. You'll see how to get into fascinating work that pays well...that offers one of America's most promising futures... that enables you to start your own business almost "on a shoe string," if you prefer this to a job opportunity.

And above all, you'll get some GOOD NEWS especially welcomed by men anxious to earn REAL MONEY in this thrilling field. For you'll see that NOW you can get the kind of practical, laboratory-type training so desirable for making real progress in Television - Radio - Electronics . . . and *WITHOUT* LEAVING HOME.

You'll see that DeForest's Training, Inc. sends everything needed to set up your own HOME LABORATORY. You get and keep the same type of basic electronic equipment used in our modern Chicago Training Laboratories. You get home training that includes the knowledge and experience gained from training thousands of students first hand in Chicago. And to top it all, you use DTI's amazingly effective and exclusive home training aid—INSTRUCTIVE MOVIES. But why not get the complete story? Mail coupon today for information-packed literature.

MODERN LABORATORIES

If you prefer, get all your preparation in our new Chicago Training Laboratories—one of the finest of its kind. Ample instructors, modern equipment. Write for details!

MILITARY SERVICE!

If you're subject to military service, the information we have for you should prove very helpful. Mail coupon today.

Build and Keep this 17-INCH TV RECEIVER —OPTIONAL after completing regular training at moderate added cost.

New "black" RECTANGULAR TUBE

Get BOTH of these colorful, information- packed folders FREE

Mail Coupon Today

DeFOREST'S TRAINING, INC.
AFFILIATED WITH
De Vry Technical Institute
CHICAGO 14, ILLINOIS

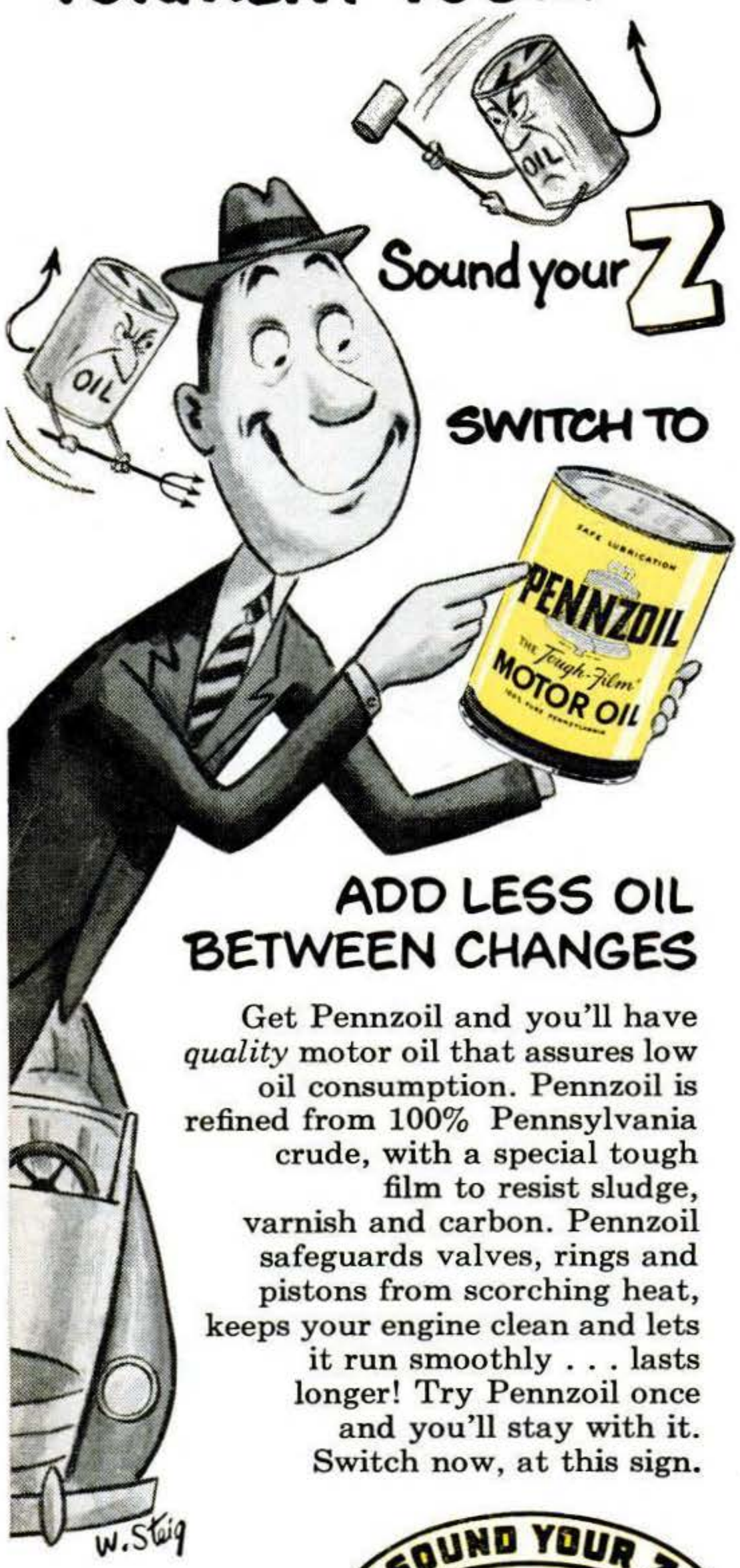
DeFOREST'S TRAINING, INC. Dept. PS-9-1
2533 N. Ashland Avenue, Chicago 14, Ill.

I would like valuable, information-packed folders showing how I may get started toward a good job or my own business in Television-Radio-Electronics.

Name _____ Age _____
Street _____ Apt. _____
City _____ Zone _____ State _____

Copyrighted material

DON'T LET ADDED QUARTS TORMENT YOU...



ADD LESS OIL BETWEEN CHANGES

Get Pennzoil and you'll have *quality* motor oil that assures low oil consumption. Pennzoil is refined from 100% Pennsylvania crude, with a special tough film to resist sludge, varnish and carbon. Pennzoil safeguards valves, rings and pistons from scorching heat, keeps your engine clean and lets it run smoothly . . . lasts longer! Try Pennzoil once and you'll stay with it. Switch now, at this sign.

Gives all engines an extra margin of safety.

SOUND YOUR Z
100% Pure Pennsylvania
PENNZOIL
Safe Lubrication

Member Penn. Grade Crude Oil Assn., Permit No. 2

PENNZOIL® MOTOR OIL AND LUBRICANTS AT BETTER DEALERS . . . COAST TO COAST

POWERFUL MOTOR

One of the smallest precision motors ever built yet does GIANT - SIZED JOBS. Drives Model Planes, Boats, Construction Sets, Working Models, Trains and Cars, etc., with amazing speed up to 6800 R.P.M. (or as little as 50 R.P.M.) using the reduction gears that come with this exciting set. The MIGHTY MIDGET does hundreds of jobs. It's a Honey. Looks exactly like a Big Motor, yet measures 1"x1¼" and weighs one ounce. For only $2.98, YOU GET LOTS MORE with this Mighty Midget. You get a complete set of gears and pulleys and a transparent multi-ratio gear box as well as a battery clip with two batteries and instructions. NO SHOCKS, SPARKS, NO SHORTS, NO TRANSFORMER NEEDED. Reverses immediately, too! Endless hours of fun. Enclose check or money order for $2.98 for this entire set and we will pay postage. C.O.D. orders plus postage.

IMPERIAL SALES CO.
480 LEXINGTON AVE. DEPT. M-463 N. Y. 17, N. Y.

A "GOOD HAND" HELPS YOU SUCCEED!

LEARN TO WRITE WELL

Your Name *beautifully written, plus special pen-point for shaded writing,* *Only 10¢*

OUR 53rd YEAR

Handwriting quickly improves with our easy-to-understand picture lessons! Put your spare time to good use; send today for ☐ FREE BOOKLET, "How to Become a Good Penman," or check volumes wanted below at $1 each: ☐ Business Writing ☐ Artistic Writing ☐ Card Writing ☐ Bird & Design Flourishing ☐ Engrossing Alphabets. COMPLETE SET $4.50. Ask for price list of penman's supplies.

TAMBLYN SCHOOL of PENMANSHIP
S. A. Ziller, Pres. 438 Ridge Bldg., Kansas City, Mo., USA

Learn MECHANICAL DENTISTRY

A profession offering unlimited opportunities. Most modern and complete course embracing every branch from Plate to Porcelain Work, which prepares you to work for Dentists or start your own business. Individual instruction—practical training in day or night school. No books—no classes. Catalog upon request.

McCARRIE SCHOOL of Mechanical Dentistry
207 N. Broad Street Dept. 927 Philadelphia, Pa.

TALK—SING—PLAY OVER YOUR RADIO

with the real Radio Mike! Attaches in a jiffy—full instructions given! Swell for "parties"—"cut in" on or "kid" regular network programs or put on your own broadcasts! Amaze your friends—real fun. Beautiful Metallic Plastic 6 in. high!

12 RADIO BROADCAST LESSONS GIVEN with each mike

SEND NO MONEY Just pay postman $3.99 COD plus postage or send $3.99 and we pay postage! *Radio Mike* is available *only* from us by mail—*guaranteed.*

Midway Co., Dept. MPS-9, Kearney, Nebr.

I need 500 Men

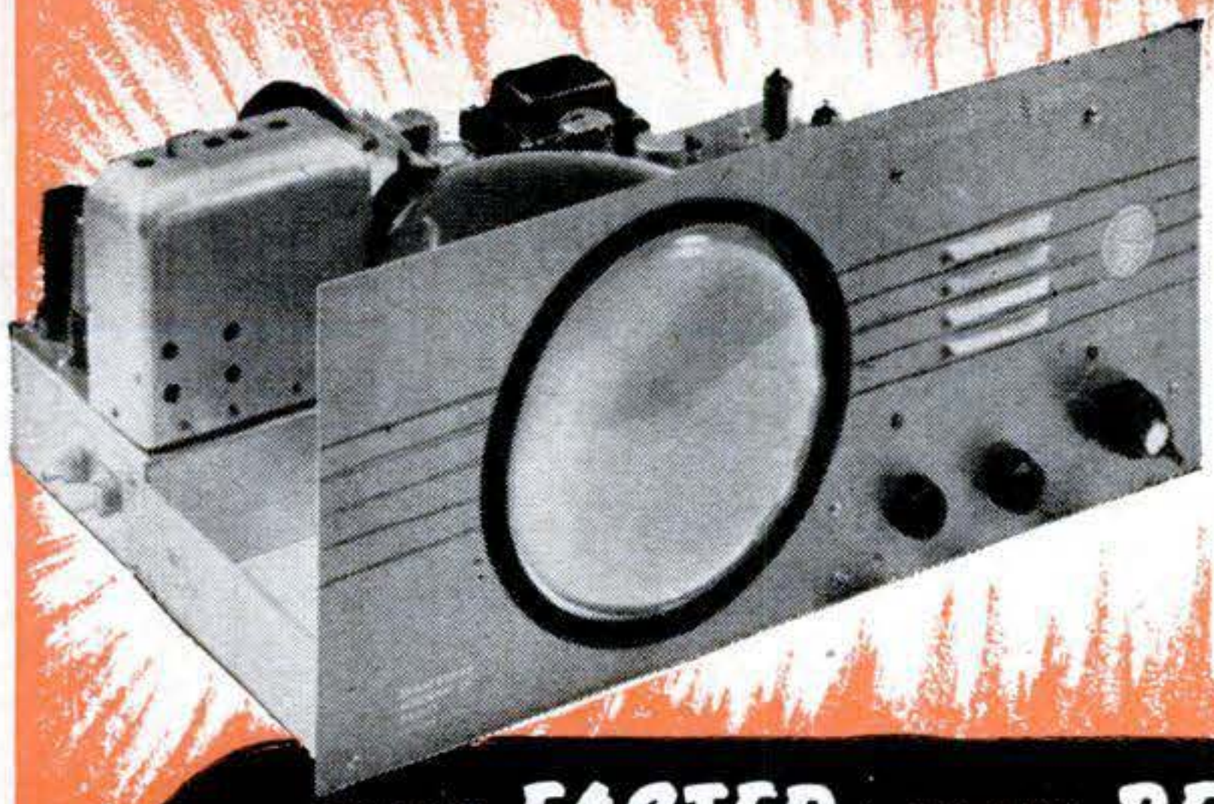
To Wear and Show Made-to-Measure SUITS

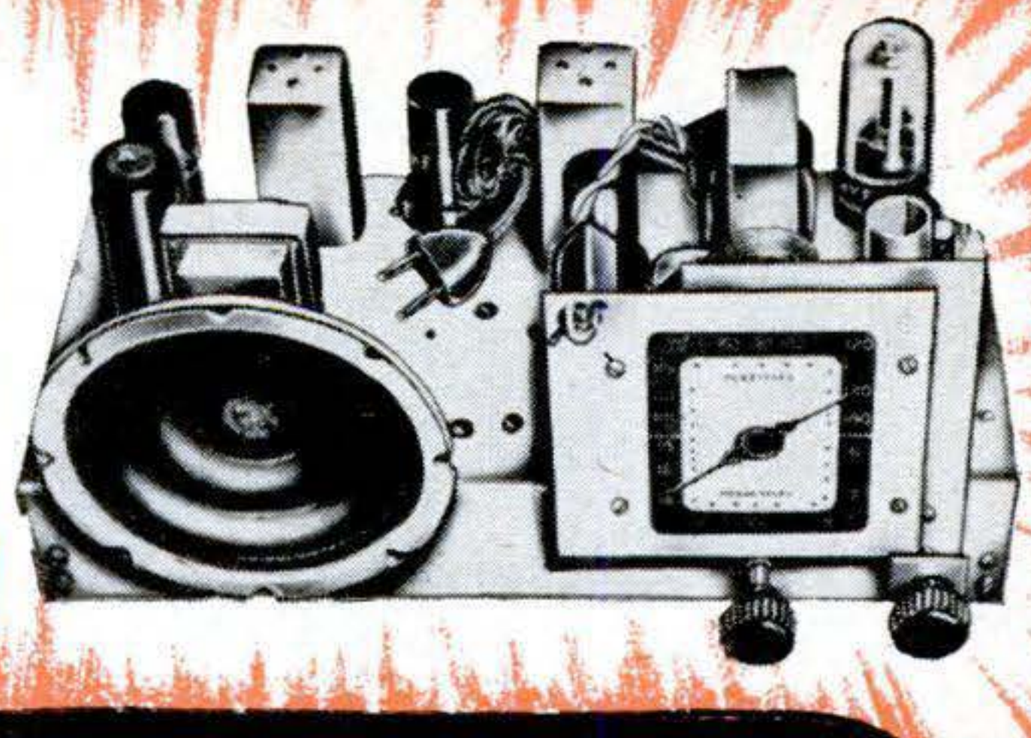
Pay No Money—Send No Money

My plan is amazing! Just take a few easy orders for my sensational values in made-to-measure suits—and get your own suits ***without a penny cost*** and make money too! Men can't resist the outstanding style, long wear and low price of my made-to-measure suits. You need no experience. Spare time pays big profits. Rush name and address today for complete details. Big **Free Sample Outfit** contains 150 actual woolen samples, style illustrations, etc. Write now!

W. Z. GIBSON, Inc., Dept. K-520
500 South Throop St., Chicago 7, Ill.

Copyrighted material





TRAIN *FASTER* — TRAIN *BETTER* — TRAIN *EASIER*

IN 10 MONTHS — OR LESS — FOR

RADIO-TELEVISION

Our 21st Year Training Men for Greater Incomes and Security in Radio-Television

I SEND YOU
18 BIG KITS
of Radio Television parts and equipment. Much of your training will be actual construction and experimentation . . . the kind of truly PRACTICAL instruction that prepares you for your Radio-Television career.

Frank L. Sprayberry
President
Sprayberry Academy of Radio

NEW! NO OBLIGATION PLAN

You Have No Monthly Payment Contract to Sign
Pay For Your Training as You Earn and Learn

You can get into Radio-Television, today's fastest growing big money opportunity field, in *months* instead of years! My completely new "package unit" training plan prepares you in as little as 10 months or even less! *No monthly payment contract to sign—thus NO RISK to you!* This is America's finest, most complete, practical training—gets you ready to handle any practical job in the booming Radio-Television industry. Start your own profitable Radio-Television shop . . . or accept a good paying job. I have trained hundreds of successful Radio-Television technicians during the past 21 years—and stand ready to train you, even if you have no previous experience! Mail coupon and get all the facts—FREE!

YOU BUILD the Television set and the powerful superhet radio receiver shown above IN ADDITION to the other test units shown here. (Many are not illustrated.)

Approved for Veterans under the G. I. Bill

Valuable Equipment Included With Training

The new Sprayberry "package" plan includes many big kits of genuine, professional Radio-Television equipment. You perform over 300 demonstrations, experiments and construction projects. You build a powerful 6-tube 2-band radio set, multi-range test meter, signal generator, signal tracer, many other projects. All equipment and lessons are *yours to keep* . . . you have practically everything you need to set up your own profitable Radio-Television service shop.

Earn Extra Money While You Learn!

All your 10 months of training is IN YOUR HOME in spare hours. Keep on with your present job and income while learning. With each training "package" unit, you receive extra plans and "Business Builder" ideas for spare time Radio-Television jobs. New television stations everywhere, open vast new opportunities for trained Radio-Television Technicians—and those in training. If you expect to be in the armed forces later, there is no better preparation than practical Sprayberry Radio-Television training.

SPRAYBERRY ACADEMY OF RADIO 111 NORTH CANAL ST. Dept. 55-N, Chicago 6, Ill.

MAIL COUPON TODAY! NO OBLIGATION

I invite you to get all the facts —

FREE TO YOU 3 BIG RADIO-TELEVISION BOOKS

Rush coupon for my three big Radio-Television books: "How to Make Money in Radio-Television." PLUS my new illustrated Television Bulletin PLUS an actual sample Sprayberry Lesson —ALL FREE. No obligation and no salesman will call. Mail coupon NOW!

SPRAYBERRY ACADEMY OF RADIO, Dept. 55-N
111 North Canal St., Chicago 6, Ill.

Please rush to me all information on your 10-MONTH Radio-Television Training Plan. I understand this does not obligate me and that no salesman will call upon me. Be sure to include 3 books FREE.

Name..... Age.....

Address.....

City..... Zone..... State.....

Copyrighted material

THEY NEED YOU

EMBRY-RIDDLE OFFERS YOU COMPLETE 6-MONTHS TO 2-YEAR COURSES...NOW!

Your Career is Waiting!

The high regard of Embry-Riddle training by the leading airlines and the entire aviation industry is demonstrated *time and again* by the big demand for Embry-Riddle graduates.

There's an important high priority job in aviation waiting for you...*however,* if you do enter the services, Embry-Riddle training will definitely give you rating advantages. Thousands of Air Force men are Embry-Riddle trained.

AIRCRAFT & ENGINE MECHANICS

Vast numbers of *properly* trained A & E Mechanics are urgently needed. Our C.A.A. approved school with a quarter-century experience assures your quickest advancement. Embry-Riddle students learn fast with modern equipment, including jet...live aircraft, airline-size hangars.

AERONAUTICAL DESIGN AND TECHNOLOGY

Embry-Riddle's accelerated 26-mo. Aeronautical Design and Technology Course provides finest training available. Technicians with management responsibility enjoy highest salaries!

COMMERCIAL PILOT

Embry-Riddle trained pilots benefit from our years of experience with 30,000 students...the best instructors, up-to-date aircraft, superb year-'round flying weather. Also Instrument and Instructor's ratings.

A & E COMBINED WITH COMMERCIAL PILOT

Airmen with *dual* pilot-engineering ability are needed by aviation companies and operators. Embry-Riddle combination training offers you the most in your aviation career.

Embry Riddle
International
SCHOOL OF AVIATION
MIAMI 30, FLORIDA

CLASSES ARE BEGINNING NOW...SEND THIS COUPON TODAY!

Dean of Enrollments – Dept. 91
Embry-Riddle School of Aviation
Miami 30, Florida

Please Print

NAME _____

ADDRESS _____

CITY _____

STATE _____ AGE _____

I am interested in...

- ☐ A & E Mechanic
- ☐ Commercial Pilot
- ☐ Aeronautical Design and Technology
- ☐ A & E Combined with Commercial Pilot
- ☐ A & E Combined with Private Pilot

Check One ☐ Veteran ☐ Non-Veteran

TRAIN IN MIAMI - AIR CAPITAL OF THE WORLD

MEN WANTED!

Make $15-$20 in Few Hours Spare Time—up to $210.00 a Week FULL TIME—with Amazing D-FROST-O-MATIC!

Millions of housewives want this sensational new Automatic Refrigerator Defroster! No more messy hand defrosting! Just plug in D-FROST-O-MATIC and refrigerator is defrosted *automatically* every night! Sales easy, sure when you leave D-FROST-O-MATIC on FREE TRIAL—housewives won't let you take it out! Saves money, food, time, work! ***Big profits for you***—up to $210.00 a week full time—$15 to $20 in just a few spare hours! Start spare time and build big, prosperous business . . . quickly, easily!

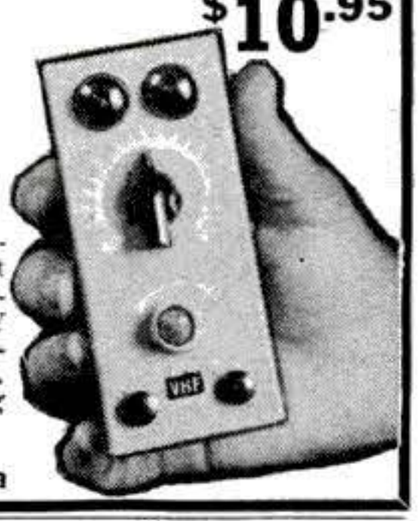
SELLY of California started in his spare time and now sells 1500 D-Frost-O-Matics a month!

Rush Name Today for Profit Details and FREE TRIAL PLAN!

More than **29,000,000** prospects waiting! Rush your name and address today. We'll airmail exciting facts, proof and sure-profit Free Trial plan. No obligation. Write today.

D-FROST-O-MATIC, Dept. M-14
173 W. Madison Street, Chicago 2, Ill.

DURA-MITE VHF RADIO $10.95



- World's most powerful tiny radio
- Receives television programs (sound)
- Covers full F-M band of 88-108 MC
- Receives police, aircraft & taxis
- Fully portable using midget battery
- No antenna or ground connections
- Picture diagram for radio beginners

Beautiful hammertone metal case, streamlined controls, tiny VHF tubes and finest quality midget parts. Complete fully finished kit ready to wire as shown ONLY $10.95 Postpaid. We are sole U.S.A. distributors for this tiny pocket-size receiver. Be the first to own one of these amazing midgets. ORDER TODAY! NOW!

ELECTRONIC MINIATURES
162 Orleans Circle Norfolk 9, Virginia

MAKE MONEY!

Sell Warm LEATHER Jackets

Rush Card TODAY for FREE SELLING OUTFIT!

Sell warm leather jackets to truckers, milkmen, gas stations, etc.! Men really go for these fast-selling garments of Horsehide, Capeskin, Suede, Nylon, and 100% Wool. Warm quilted linings, fur collars! As our man in your community, you make **BIG MONEY** on every sale, yet you don't invest one cent. Rush card **NOW**...start building your own big profit-making business right away.

CONSOLIDATED SHOE SYSTEM, Box CD-33, Chippewa Falls, Wis.

OWN a Business

If employed, start part time. Alert dealers can gross $5 hourly profit on own service plus $3 on EACH serviceman. Clean, revive, mothproof rugs & upholstery on location. No shop needed. Services nationally advertised. Repeat customers. Easy to learn. Quickly established. Easy terms. Send today for FREE booklet. No obligation.

Duraclean Co., 2-189 Duraclean Bldg., Deerfield, Ill.

TRY 30 DAYS AT *OUR RISK!*

Low in cost

New Advertising Machine Prints and Illustrates Gov't Post Cards

FREE Send name—learn how all types of business are boosting sales with Post-card Advertising. We'll also send **FREE** illustrated book of money making ideas for your business—complete, unique advertising plans—and ***30-day Trial Offer.***

CARDMASTER CO., 1920 Sunnyside Ave.
Dept. 169. CHICAGO 40, ILLINOIS

5 year Guarantee

Copyrighted material

CRACK DOWN ON MONEY WORRIES!

You can have more money for things you need—a better job—bigger responsibility—congratulations and praise—by letting I. C. S. train you to succeed instead of standing still

Higher prices! Higher costs! Bigger taxes! You feel them too — because they leave LESS for necessities, LITTLE for luxuries! But YOU can have money for shoes, food, clothing, pleasure. Business and industry are still looking for men and women who can qualify for higher jobs. Not tomorrow, not the next day, but TODAY. With the right training you can name your own price. Why stay where you are?

TRAIN—TO GET THERE I. C. S. will show you how to develop the skills and hidden talents within you, how to bring out your personality and self-force, all a part of you. Let these assets go to work for you — right away!

Study at home, what a relief!

No need to go out and sit and listen. Study WHEN you want and WHERE you want. Any time — no set hours. Do it when you feel like it — and get MORE out of I. C. S. training!

THERE'S NO TRAINING LIKE I.C.S. TRAINING!

Biggest builder of successes on earth! 61st year — 5,918,632 students to date. I. C. S. gives you the practical plus the bedrock facts and theory. No skimming or skimping!

LOOK WHAT OTHERS SAY

Typical of thousands of letters from students

"Thanks to I. C. S. training, my salary has been increased 204%!" N. E., Bellingham, Wash.

"Mention of my I. C. S. course alone opened a new position for me!" A. R. P., South Gate, Calif.

"I got a break over more experienced fellows because of my I. C. S. training." M. D., Suncock, N. H.

"The I. C. S. course marked a milestone in my career." J. R., Philadelphia, Pa.

I. C. S. offers you 391 courses to choose from — in any and every field. Every course trains you for a bigger job and higher pay.

BIGGER JOB, HIGHER PAY, HAPPIER FAMILY

All this comes from qualifying yourself for the job above. It takes training and skill. And the only place you can get them is out of yourself. Do something to make training and skill your allies.

WOMEN—here's your chance

I. C. S. offers women many courses to qualify for better jobs, bigger responsibility, more pay, a brighter future.

GOING INTO ARMY-NAVY?

Don't get in a rut. Qualify for bigger rating, higher pay. Start training today — be ready when the time comes.

Get started on the road to success. That means—send this coupon—it brings important information. Also free book "How to Succeed."

INTERNATIONAL CORRESPONDENCE SCHOOLS ICS

Box 7612-N, SCRANTON 9, PA.

☐ Please send me free 36-page book, "How to Succeed."
Please rush me free booklet on career subject checked:

☐ Accounting & Mgmt.
☐ Automobiles
☐ Chemical Engineering
☐ Commercial Art
☐ Drafting
☐ Electrical Engineering
☐ High School
☐ Mechanical Engineering
☐ Television & Radio

Name_____ Age_____

Address_____

City_____ State_____

Employed by_____ Position_____

Special tuition rates to members of the Armed Forces. Canadian residents send coupon to International Correspondence Schools Canadian, Ltd., Montreal, Canada.

Copyrighted material

LEARN UP-TO-DATE

APPLIANCE REPAIR

MAKE GOOD MONEY *at HOME!*

A MODERN BIG PROFIT ONE-MAN BUSINESS CAN BE YOURS AT HOME — SPARE OR FULL TIME. New visual "shop-practice" method quickly shows you how to repair Home Freezers, Refrigerators, Vacuums, Garbage Disposals, Automatic Washers and Dryers, Motors, Fluorescent Lights, Fans, Irons–yes, even House and Industrial wiring. You can set up shop in your garage, basement, porch or attic, wherever you have a little bench space. No costly leases–no big overhead–no need to hire others–no selling–we show you how to make business *come to you.*

BIG MONEY—SECURE FUTURE—INDEPENDENCE. Hundreds of plain-as-day "How-to" photos and drawing make it easy. F. V. in N. Y. says: *"I made $800 in 3 months while studying."* T. E. H. in W. Va. says: *"Made $14 a day while learning."*

NO PREVIOUS EXPERIENCE NEEDED. You will get, in addition to complete instructions, my book, "How to Open Your Own Electric Appliance Business." It shows you how to start small and grow big. Everything furnished to help you build your own Big Profit business at home. Yes! We even supply you with appliance tester and tools! Write today for this amazing new Home Business Plan–It's FREE! Send no money–just your name and address.

PACIFIC TRAINING SCHOOL, Dept. S-529.
7217 S. Broadway, Los Angeles 3, California.

BE YOUR OWN BOSS!!!

Make big money! Get ahead in something for yourself! Be a floor surfacing contractor and sand both new and old floors. No experience needed. High earnings, steady work with a future! Write for booklet "Opportunities in Floor Surfacing," enclosing 25 cents in coin or stamps to cover handling.

AMERICAN
FLOOR SURFACING MACHINE CO.
532 So. St. Clair Street • Toledo 3, Ohio

INVENTORS

Your first step—if you consider your invention to be something of importance—is to have a search made of pertinent, prior U. S. patents. If our search report indicates probable patentability of your invention, you may apply for a patent which gives you the right to exclude others from making, using or selling your invention as claimed for a term of 17 years.

This firm is registered to practice before the U. S. Patent Office and is available to assist in the preparation of the necessary drawings, specification and claims.

Ask for a copy of our instructive booklet "Patent Protection for Inventors" and our convenient "Evidence of Invention" form. No obligation.

VICTOR J.
EVANS & Co. *Merlin M. Evans*
REGISTERED PATENT ATTORNEY
740-K MERLIN BUILDING, WASHINGTON 6, D. C.

INVENTORS

Before you make any effort to market your invention, you should take the first steps toward proceeding for patent protection.

I shall be pleased to furnish you with information relative to patent procedure upon request from you, and this will be without any obligation on your part.

PATRICK D. BEAVERS
Registered Patent Attorney
937 Columbian Building, Washington 1, D. C.

INVENTORS

IF YOU WISH TO PROTECT YOUR INVENTION, You should take steps to protect it by a U. S. Patent. Write me for "INVENTION RECORD" FORM

CARL MILLER
REGISTERED PATENT ATTORNEY
WOOLWORTH BLDG., 35th FLOOR, 92C
NEW YORK CITY

PATENTS

C. A. SNOW & CO.
REGISTERED PATENT ATTORNEYS
WRITE FOR INFORMATION TO
426 SNOW BUILDING, WASHINGTON 1, D. C.

INVENTORS

Whether an invention is patentable can be substantially determined by a search of the U. S. Patent records. Without obligation, write for information explaining the steps you should take to secure a patent.

JOHN N. RANDOLPH
Registered Patent Attorney
205 Columbian Building Washington 1, D. C.

INVENTORS

Send for
PATENT INFORMATION
Book and
INVENTOR'S RECORD
without obligation

GUSTAVE MILLER
92PS Warner Building
Washington 4, D. C.

REGISTERED PATENT ATTORNEY
PATENT ATTORNEY & ADVISOR
U. S. NAVY DEPT. 1930-1947
ASSOCIATE EXAMINER
U. S. PAT. OFF. 1922-1929
PATENT LAWYER

IMPORT PAYS BIG

Opportunity to START AT ONCE IMPORTING big profit items–for your own world-wide import-export mail order business from home, anywhere, without capital; or work for others—travel abroad if desired. Men, women, no previous experience—learn at home from established World Trader new, easy method.
FREE details—write NOW! MELLINGER CO., Suite 249 Los Angeles 24, Cal.

Copyrighted material

Now! Earn $5..$8..$10..up to $12.50 per Hr.

SPARE TIME!

Sensational New HOME-BUSINESS!

AMAZING NEW PRINTING SECRETS CAN BE YOURS

For Pleasure & Profit. Once you learn the closely guarded printing secrets of Screen-Print there's virtually no limit to how much "extra money" you can earn. SPARE-TIME WORK—For FULL-TIME PROFITS. Screen-Printing is the most fascinating Home-Business ever! Learn in a few days and start making money immediately. Even earn while you learn—it's amazing!

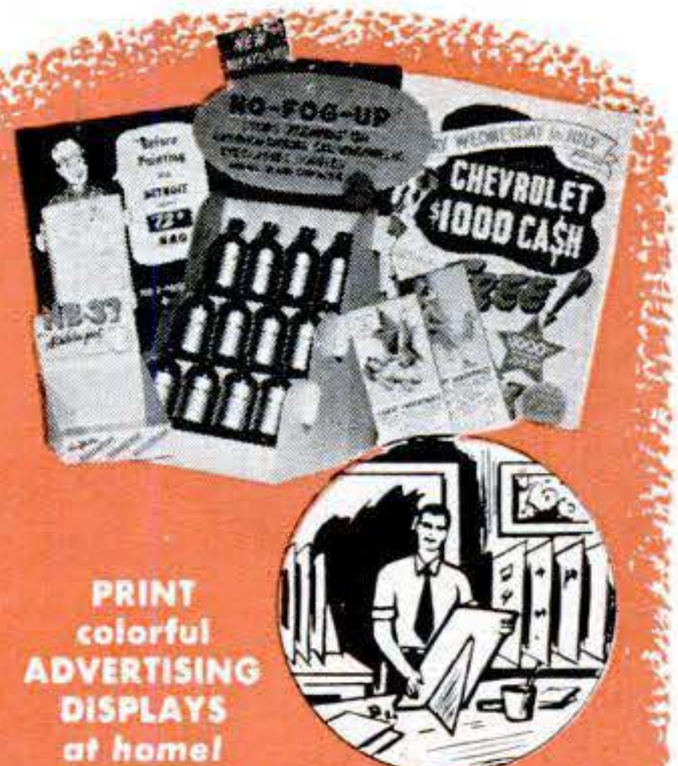
LEARN AN "EXTRA TRADE"

MEN! WOMEN! Learn Screen-Printing and make up to $200 per week—even working for someone else. Learn Screen-Printing and you learn an "extra trade."

PRINT WITHOUT A PRINTING PRESS!

OR ANY SPECIAL EQUIPMENT

SCREEN PRINT TRADE MARK REG.

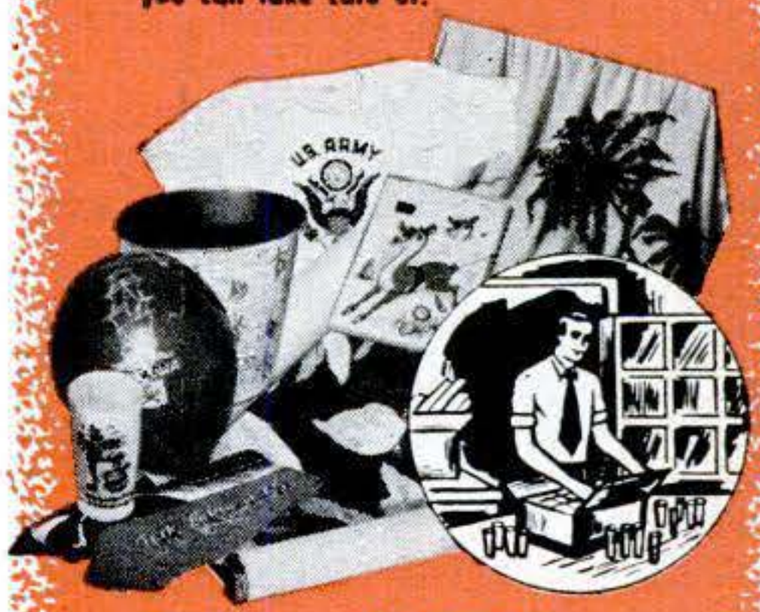


PRINT colorful ADVERTISING DISPLAYS at home!

You've seen thousands of them in stores, gas stations, theaters, markets — everywhere! Many of these displays are printed by Screen-Printing in brilliant "eye-catching" colors.

PRINT expensive SIGNS, BANNERS, POSTERS, LABELS, etc. at home!

EVERY BUSINESS, large or small, needs these items—they order them almost daily. It's possible to specialize in Screen-Printing banners alone and get all the orders you can take care of.



PRINT beautiful CLOTH, FABRICS, GLASSES, NOVELTIES etc. at home!

Because you can Screen-Print on any kind of materials, there are thousands of uses. Print lamps, glassware, ties, calendars, draperies, wall paper, flags, dress materials, balloons, bowls, etc. Orders come from gift shops, manufacturers, markets, department stores, etc.

WHAT IS SCREEN PRINTING?

It's a revolutionary new method of printing—*WITHOUT* an expensive printing press. This amazing new development lets you print quantities of 25, 50, 100, 500 or even 1,000 in many cases, FOR LESS THAN YOU CAN PRINT ON A $5,000 PRINTING PRESS. Just put anything under a screen and take out beautiful products of printing—no expensive plates or "cuts" needed. No big overhead. Never has such an opportunity been offered the spare-time person who wants to make "Extra Income" in his home. This amazing NEW INDUSTRY can mean huge spare time profits for you.

PRINT IN COLORS—EVEN NEW FLUORESCENT COLORS

There's no limit to the number of colors you can use. It's easy to print in luminescent, "glowing" fluorescent colors, too. (These "brilliant" new inks can ONLY be printed satisfactorily by the Screen-Print method.) Screen-Print lets you print on paper, cardboard, leather, glass, wood, plaster, fabrics—anything!

NO ART NECESSARY—EASY TO LEARN

Anyone (young or old) can be a Screen-Printing expert—he doesn't have to be a "Rembrandt" either. Beautiful printing can be produced WITHOUT doing any art work whatsoever—simple tracing is all that's necessary in most cases. Simplified photo method ELIMINATES ALL HAND WORK. No camera needed.

One of America's FASTEST GROWING BUSINESSES!

Hundreds are already profiting handsomely with Screen-Print. This New method may revolutionize the printing business, as we know it today! Get the facts NOW!

A BUSINESS OF YOUR OWN

Be your own boss. Operate from the corner of your kitchen or garage. Build a successful future with a few cents worth of materials. Screen-Printing is the opportunity to establish a spare-time business without sacrificing job or pay check—have 2 INCOMES INSTEAD OF ONE.

"I already make 75% of my expenses doing Screen-Printing only spare-time" says Mr. E. L., Ontario.

THERE'S $$$$ IN ADVERTISING!

Here's your chance to GET INTO ADVERTISING—one of the largest paying businesses in America. Most Screen-Printing is used for advertising purposes. Materials cost you 10%—you can earn 90%—few businesses offer this high profit.

HUGE DEMAND! ENORMOUS PROFITS!

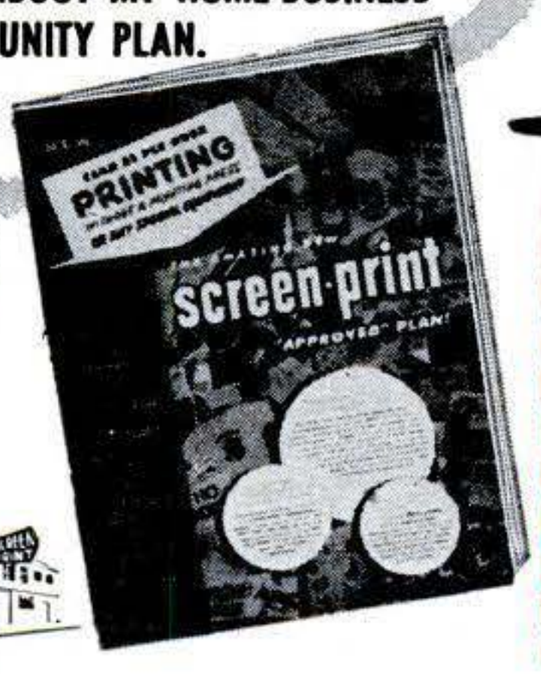
Millions of shops, stores, theaters, markets—almost any business needs Screen-Printing done for them. It's possible to even do your business by mail. No house-to-house selling either. You can make $10 to $20 profit on each dollar of cost on some jobs. Here's

YOUR "Chance of a Lifetime" OPPORTUNITY to "cash-in" on a new printing method not generally known. We supply everything you need! From easy step-by-step instructions-secrets plus materials enough to make money immediately. A complete ready-made BUSINESS PLAN guides you every step of the way. This all can be yours—at our risk. Space here does not permit telling you all the terrific opportunities of Screen-Print Don't waste a minute — mail coupon NOW! TODAY!—and get all the FREE FACTS and ACTUAL SAMPLE.

FREE

MY BOOKLET AND ACTUAL SAMPLE OF SCREEN-PRINTING. TELLS ALL THE FACTS ABOUT MY HOME-BUSINESS OPPORTUNITY PLAN.

Mr C. J. Nowak GENERAL MANAGER



SCREEN PRINT COMPANY Dept.19
1010 SO. LOS ANGELES ST.,
LOS ANGELES 15,
CALIFORNIA

FREE BOOKLET AND REAL SAMPLE
MAIL TODAY!

Screen-Print Co., Dept. 19
1010 So. Los Angeles Street
Los Angeles 15, California

Dear Mr. Nowak: Please rush me booklet, facts, sample and entire Home-Business Plan. All this is Free. No salesman will call. I am under no obligation now or ever.

Name _____

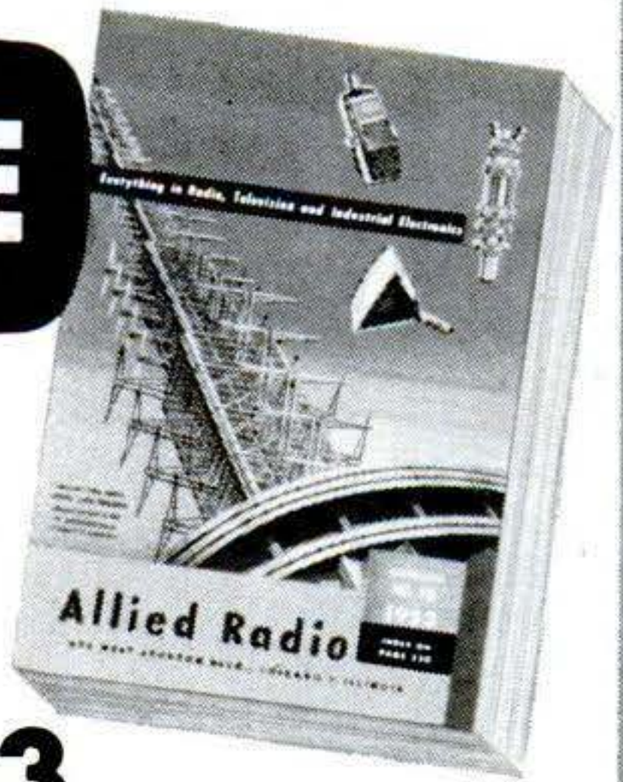
Address _____

City _____ Zone ____ State _____

Copyrighted material

GET THE WORLD'S LEADING
TV & RADIO CATALOG

FREE



236 VALUE-PACKED PAGES

1953 ALLIED BUYING GUIDE

Save on Everything in TV & Radio!

Everything for Experimenters, Builders, Amateurs, Servicemen, Engineers and Soundmen

Get the big 236-page 1953 ALLIED Catalog featuring the world's largest selections of latest top-quality electronic equipment at lowest, money-saving prices. See the newest in TV, home radios, Amateur Equipment, Hi-Fidelity sound, P.A. systems, recorders, test instruments, builders' kits—plus thousands of parts, tubes, tools and books. Get more for your money from the World's Largest Radio Supply House. Send today for your FREE 1953 ALLIED Catalog!

FREE CATALOG SEND FOR IT TODAY

ALLIED RADIO

ALLIED RADIO CORP., Dept. 7-J-2
833 W. Jackson Blvd., Chicago 7, Illinois
☐ Rush FREE 1953 ALLIED 236-Page Catalog

*Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

Housework Easy Without Nagging Backache

Nagging backache, loss of pep and energy, headaches and dizziness may be due to slowdown of kidney function. Doctors say good kidney function is very important to good health. When some everyday condition, such as stress and strain, causes this important function to slow down, many folks suffer nagging backache—feel miserable. Minor bladder irritations due to cold or wrong diet may cause getting up nights or frequent passages.

Don't neglect your kidneys if these conditions bother you. Try Doan's Pills—a mild diuretic. Used successfully by millions for over 50 years. It's amazing how many times Doan's give happy relief from these discomforts—help the 15 miles of kidney tubes and filters flush out waste. Get Doan's Pills today!

WHAM-O SPORTSMAN * $1.50 POSTPAID 35-LB. PULL!

HITS LIKE A RIFLE—
KILLS RABBITS, SQUIRRELS.
Powerful, silent, accurate.
For hunting, target, routing pests.
Sportsman's choice sold world over!

HUNTING SLINGSHOT
Heavy duty 7" ash stock.
40 steel balls, extra rubber, target.
GUARANTEED. At dealers, or send $1.50 to
Wham-O Mfg. Co. Box 8B, South Pasadena, Calif.
* Professional model of Nat'l Slingshot Assn.

How to Make Money in PHOTOGRAPHY

Unique, low-cost LEARN-BY-DOING method and INDIVIDUAL attention trains you quickly at home in spare time. Start making money in photography at once! We show you how. Our 43rd year. Big FREE colorful book gives full facts. Write TODAY! Resident Training also available.

Send for FREE BOOK

NEW YORK INSTITUTE OF PHOTOGRAPHY
Dept. 5, 10 W. 33 St., New York 1, N. Y.

Easy-to-Build Old-Time Autos!

FREE! Write for Your Copy of Our 4-Color FOLDER

Authentic models—6" to 10½" in length—to assemble in your leisure hours! All our kits include shaped parts, wheels, lights, horn, radiator, etc. and instructions. Choice of 16 antique autos—$1.95 to $3.95 each.

1904 Olds—$1.95

● IF YOU ORDER DIRECT, add 25c for postage and handling.

Hudson Miniatures' "OLD TIMERS" Antique Auto Sets
SCRANTON HOBBY CENTER, Dept. 28, Scranton 10, Pa.

Whether You Need $10 or $110

You Can Make It *EASILY* with ARTISTIC Christmas Cards

Show newest, smartest 21-Card $1 Christmas Assortments in spare time. You make **$50** on 100 boxes! Make still more with Personalized Christmas Cards and Stationery low as **$1** per box. Other fast sellers. No experience needed. Assortments on approval, Personalized samples FREE!

Guaranteed by Good Housekeeping — REPLACEMENT OR REFUND OF MONEY IF NOT AS ADVERTISED THEREIN

SEND FOR MONEY-MAKING SAMPLES TODAY!

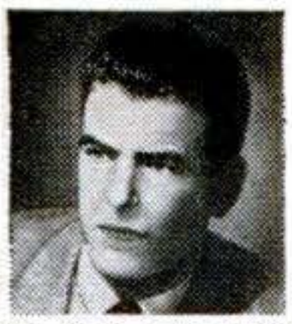
ARTISTIC CARD CO., INC.
955 Way St., Elmira, New York
Please send full details with Assortments on approval, and FREE Personalized Samples.

Name_____

Address_____

City_____ Zone____ State_____

Copyrighted material



"We have been using your book on Auto Repair for the past year and feel like it is a third man around the shop."—*F. M. Scott, Stanwood, Wash.*

"Fixed motor in 30 minutes another mechanic had worked on half a day."—*C. Auberry, Murfreesboro, Tenn.*

"Instructions so clear, have no trouble learning anything about any car. Now working as mechanic in big plant."—*S. Ordonez, San Francisco, Calif.*

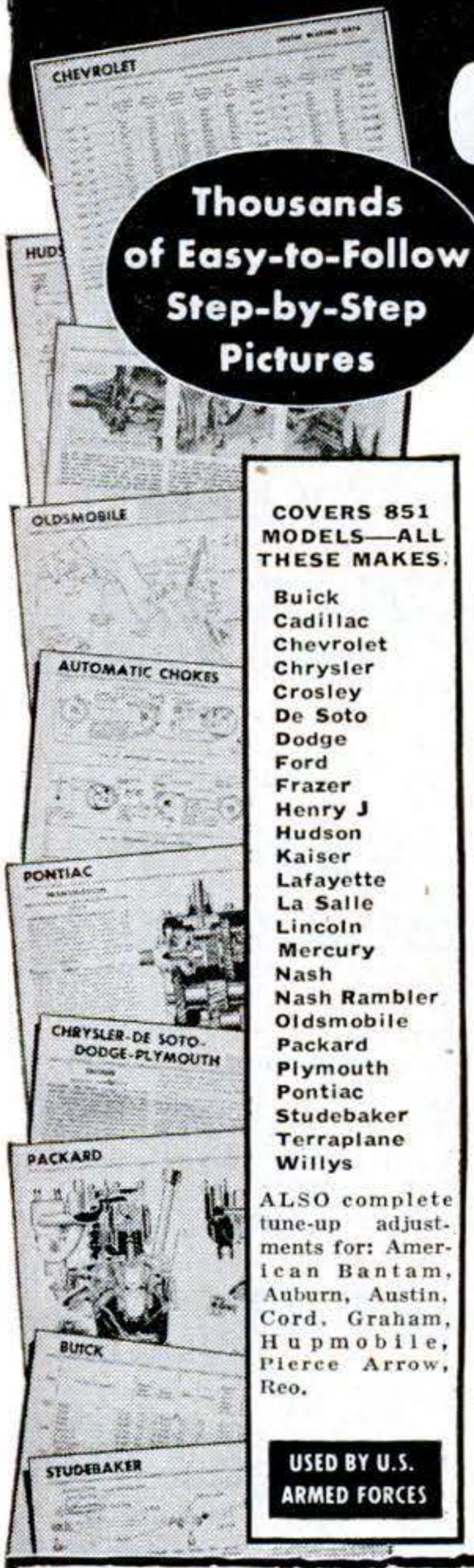
"So easy to understand—have done jobs with Manual I would not have attempted without it." — *C. L. Vanerstrom, Hazel Park, Mich.*

"I have found my MOTOR Manual a wonderful help. It has put me in a position to do every job." — *S. L. Sharpless, Los Angeles, Cal.*

THOUSANDS OF MEN ARE RAVING ABOUT THIS GIANT GUIDE!

Now YOU Can Be a "Crackerjack" at Auto Repairs!

BRAND-NEW 1952 EDITION!



Thousands of Easy-to-Follow Step-by-Step Pictures

COVERS 851 MODELS—ALL THESE MAKES.

Buick
Cadillac
Chevrolet
Chrysler
Crosley
De Soto
Dodge
Ford
Frazer
Henry J
Hudson
Kaiser
Lafayette
La Salle
Lincoln
Mercury
Nash
Nash Rambler
Oldsmobile
Packard
Plymouth
Pontiac
Studebaker
Terraplane
Willys

ALSO complete tune-up adjustments for: American Bantam, Auburn, Austin, Cord, Graham, Hupmobile, Pierce Arrow, Reo.

USED BY U.S. ARMED FORCES

Easy-Step-by-Step Instructions Show How to do ANY Job on ANY Car—from 1935 through 1952!

THOUSANDS of men are raving about MOTOR'S BIG NEW ILLUSTRATED AUTO REPAIR MANUAL! It enables them to do *any* job FASTER and better; do MORE jobs; make MORE money!

Whether it's on a 17-year-old "jaloppy" or a brand-new 1952 beauty. YOU, too, can "breeze through" *any* repair job quickly, easily, right! Just look up the make, model, and job in the quick index—and *go to it!*

Everything You Need to Know to Repair Any Car!

This NEW 1952 REVISED edition has MORE REPAIR INFORMATION THAN EVER—right up to the minute! Over 800 big pages. 2400 "This-Is-How" pictures — clear drawings, diagrams, cut-away photos that lead you every step of the way. Over 200 "Quick-Check" charts containing more than 38,000 essential repair specifications. Over 225,000 service and repair facts. Clear, simple directions. You *can't* go wrong!

Any man—even a green beginner—can do a good job. If you're a top-notch mechanic, you'll find yourself tackling jobs now that you wouldn't touch before!

Earn More Money! Win Greater Prestige!

The editors of MOTOR'S Manual have put together the "Know-How" from over 170 *Official Factory Shop Manuals;* "boiled it down" into one handy book!

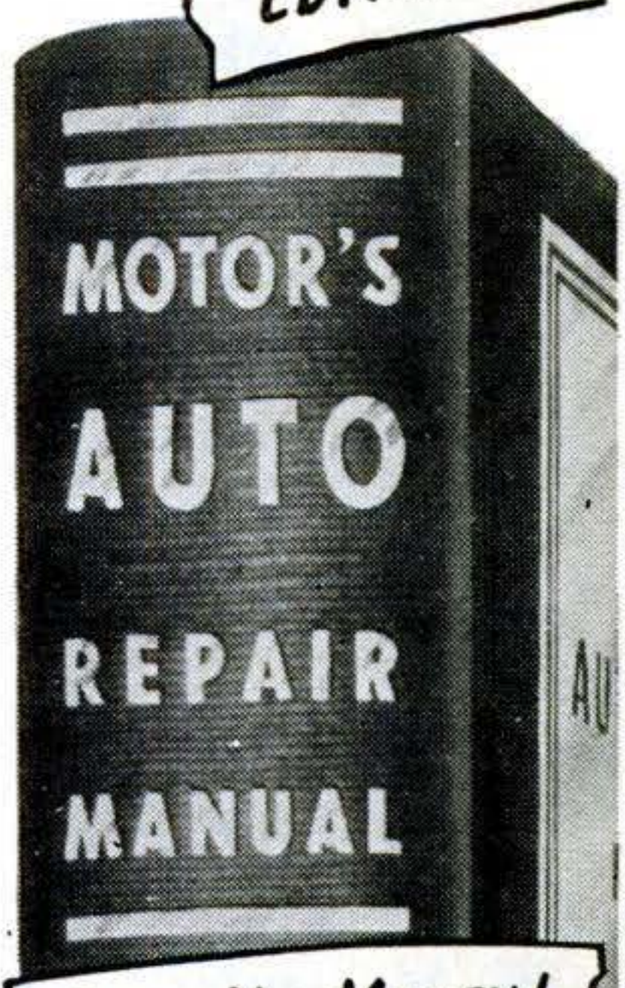
Includes ALL Automatic Transmissions (including new Dual Range Hydra-Matic). Covers the newest Carburetors, Engines (including new De Soto, Lincoln, Ford) . . . Chokes . . . Fuel Pumps . . . Oil Filters . . . Starting Motors . . . Generators . . . Distributors . . . Clutches . . . Universals . . . Axles . . . Brakes . . . Power Steering . . . Shock Absorbers, etc.

Valuable help in Body Service. Factory Specifications and Adjustment Tables. Tune-up Charts. Tables of Measurements and Clearances. Overhauling and Replacement Facts — AND MUCH, MUCH MORE.

Used by Armed Forces, hundreds of thousands of auto service men! YOU'LL want it, too, once you see its over 800 giant pages—almost a foot high!—its 2400 close-up pictures! Try it on the following UNCONDITIONAL GUARANTEE:

Try Book for a Week FREE

Send No Money. Pay nothing to postman. Test book in your own garage or shop. *It's GUARANTEED to pay for itself in 7 days.* If it doesn't, just return the book, and owe nothing. You don't risk a penny. Rush coupon for your free-trial copy of this great money-saving Manual. MOTOR Book Dept., Desk 2K, 250 West 55th St., New York 19, N. Y.



SEND NO MONEY! TRY BOOK FOR A WEEK FREE!

MAIL COUPON NOW FOR 7-DAY FREE TRIAL

MOTOR Book Dept., Desk 2K,
250 West 55th Street, New York 19, N. Y.

Rush to me at once: (Check box opposite book you want)

☐ **MOTOR'S New AUTO REPAIR MANUAL** If O.K. I will remit $1 in 7 days (plus 35c delivery charge), then $2 monthly for 2 months, and a final payment of 95c a month later. Otherwise I will return book postpaid in 7 days. *(Foreign price, remit $8 cash with order.)*

☐ **MOTOR'S New TRUCK AND TRACTOR REPAIR MANUAL.** (Described at left.) If O.K. I will remit $2 in 7 days, and $2 monthly for 3 months, plus 35c delivery charge with final payment. Otherwise I will return book promptly. *(Foreign price, remit $10 cash with order.)*

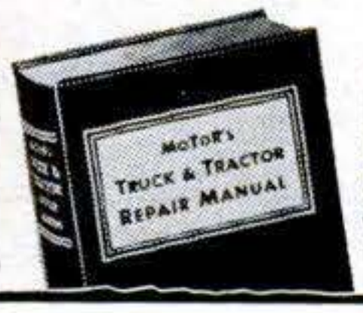
Print Name .....Age .....

Print Address .....

City & Zone No.....State.....

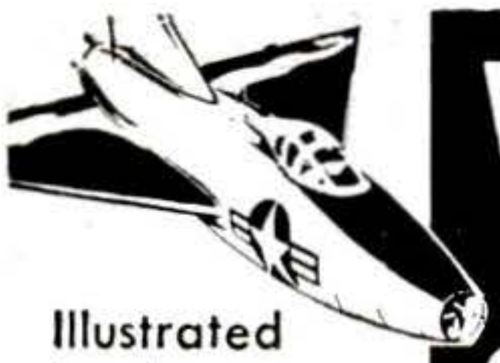
☐ **SAVE 35c delivery charges** by enclosing WITH COUPON check or money order for full payment of $5.95 for Auto Repair Manual (or $8.00 for Truck and Tractor Manual). Same 7-day return-for-refund privilege applies.

Same FREE 7-Day Offer on MOTOR'S TRUCK and TRACTOR REPAIR MANUAL



Covers EVERY job on EVERY gasoline-powered truck and farm tractor made from 1936 thru 1951. 2267 pictures, 925 big 8½ x 11-inch pages, 300,000 facts. Used by Armed Forces. All types Gasoline Engines, Fuel Systems, Governors, Lubrication Systems, Ignition Systems Starters, Generators, Clutches, Transmissions, Axles, Torque Dividers, Transfer Cases, Brakes, Steering, etc. Check proper box in coupon for free trial.

Copyrighted material



WORK IN COOL SAN DIEGO

Illustrated book sent FREE

San Diego offers you California living at its best — and Convair gives you the top working conditions. Employee Retirement Plan. Group Insurance. Two weeks vacation. Eight holidays annually. Free Housing Office and much more — *plus* that wonderful San Diego climate. These classifications now open for you:

1. TOOL DESIGNERS
2. TOOL PLANNERS
3. PATTERN MAKERS
4. TOOL & DIE MAKERS
5. JIG AND FIXTURE BUILDERS
6. MACHINISTS
7. LOFTSMEN
8. FIELD & SERVICE MECHANICS
9. AIRCRAFT MECHANICS
10. AIRCRAFT ELECTRICIANS
11. IBM TAB MACHINE OPERATORS
12. INSPECTORS

CONVAIR

Send this coupon for FREE book and details:

Employment Office 600
Consolidated Vultee Aircraft Corporation
3302 Pacific Hiway
San Diego, California

NAME _____

OCCUPATION _____

ADDRESS _____

CITY _____ STATE _____

"I LOST 30 LBS. OF DANGEROUS UGLY FAT. 4 INCHES OFF MY WAIST!"

says Felipe Mendoza, Calif.

NOW — BEFORE

2 Which of these ME'S is YOU?

"That 220 lb. FAT-BOY at the right was ME a few short weeks ago", says Felipe Mendoza. Look at him NOW! I took off 30 lbs. of ugly fat and gave him MIGHTY MUSCLES, took off 4 inches of rolling fat from his belly, added 7 inches to his CHEST, 3 inches of MUSCLE on each arm! They don't call him FATSO anymore!

NO! I don't care how fat and flabby you are. All I want is 10 minutes a day in your home to make you over by the same method I turned myself from a wreck into a Champion of Champions. You'll become an ALL-AROUND, ALL-AMERICAN, HE-MAN, A WINNER in everything you tackle—or my training won't cost you one cent.

FELIPE MENDOZA was a 220 lb. FAT-BOY. Look at him NOW!

SEND ME ONLY **10¢** for all **5** PICTURE-PACKED HE-MAN BUILDING Courses and also get

Both FREE 1. PHOTO BOOK OF STRONG MEN 2. A MUSCLE METER

"Win This 15" Silver Trophy as I did." Felipe Mendoza

JOWETT INSTITUTE, Dept. PS-29
220 Fifth Ave., New York 1, N. Y.

Dear George: I enclose 10c for which please send me on trial all 5 picture-packed HE-MAN Building Courses, FREE photo book and Muscle Meter.

NAME.....AGE.....
(Please print plainly. Include Zone Number)

ADDRESS.....No C.O.D.'s

CITY.....ZONE.....STATE.....

MONTH AFTER MONTH, YEAR AFTER YEAR, YOU SEE OUR AD.
REMEMBER IT'S DANGEROUS to pay less if you want the finest nonskid USED tires.

GOODYEAR Firestone

GOODRICH, UNITED STATES, GENERAL, & OTHERS, NOT RECAPS
DOUBLE WARRANTY & UNCONDITIONAL GUAR. ON PASS. TIRES

Our policy is to select your tires so carefully, as if our very future depended on the service given by that particular tire.

FREE TUBE WITH EVERY GOOD GRADE AND FINEST GRADE, TRUCK & PASSENGER TIRE

GOOD GRADE GUAR. 20 MONTHS, (NOT JUST 6 OR 12 MOS.)

600-16	$4.14	820-15	$5.44	600-20	$7.14	32x6(8)	$8.64
650-16	5.42	700-15	4.54	650-20	7.94	32x6(10)	9.94
700-16	5.04	670-15	4.48	700-20	8.54	900-20	13.18
650-15	4.44	710-15	4.68	750-20	8.64	1000-20	13.78
760-15	5.04	550-17	4.64	825-20	14.78	1100-20	13.94

FINEST GRADE, 30 MONTHS GOLDEN RULE GUARANTEE BOND (NOT JUST 24 MONTHS) THIS GRADE MADE US WORLD FAMOUS

600-16	$5.38	700-16(6)	$8.78	30 MOS. GUAR. TRUCK TIRES			
600-16(6)	7.38	475-19	5.08	700-15(6)	$12.48	700-20	$11.08
650-16	5.98	640-15	5.08	700-17	13.48	750-20(8)	15.48
650-16(6)	8.28	670-15	5.68	750-16	10.78	750-20(10)	12.78
700-16	6.48	710-15	5.88	750-17	16.68	825-20	18.48
750-16	9.78	760-15	6.08	750-15	19.08	900-20	17.28
525-18	5.08	800-15	6.58	825-15	22.18	1000-20	17.88
550-17	4.98	820-15	6.68	600-20	8.78	1100-20	19.58
650-15	5.38	670-16	6.38	650-20	10.28	1200-20	23.28
700-15	5.58	760-16	7.58	32x6(8)	11.48	1000-22	19.58
WHITEWALLS $1 ea. EXTRA				32x6(10)	11.88	1100-22	20.48

Buy the 'Right' Truck Tires for 'Your' Job. Thousands of the Best Fleetowners Depend on Us.

Std. Guar. 16 Mos. Rugged Guar. 30 Mos.
MILITARY MUD-SNO TREAD

750-20 Std	$10.08	750-20 Rugg	$16.68
600-16 "	6.18	600-16 Rugg	9.98
900-16 "	10.08	900-16 Rugg	16.68

BLATT BLATT BLDG., GIRARD & LANCASTER AVES. DEPT. PS, PHILADELPHIA 31, PA.

Send check or money order. Send this ad with order. We won't ship a tire we wouldn't use. "3 Generations of 'Tire Blatts'."
Shipments RUSHED Down South, Up North and Far West

BECOME AN EXPERT IN TRAFFIC

Traffic men earn $4,000 to $10,000 and up. Thousands of firms need experts on rates, tariffs, regulations. We train you thoroly in spare time at home for executive traffic jobs. Personal training under traffic authorities. Placement counsel and help. Write for free 48-page book "Traffic Management—the Fast Growing Profession."

LASALLE Extension University, 417 So. Dearborn St.
A Correspondence Institution Dept. 983T Chicago 5, Ill.

Watch Repairing Pays Big Money Learn at home

Watch repairers in great demand. Train step-by-step in 10 easy lessons. We furnish all tools and 15 jewel watch and practice movement. Turn spare time into cash. A licensed school. Low cost. Send for FREE book today.

ILLINOIS SCHOOL OF WATCH REPAIRING
2870 Elston Ave., Dept. PS 92, Chicago 18, Ill.

TASOPE PHOTO-ENGRAVING PLANTS

MATERIAL COST OF THIS CUT 3/4¢ SELLING PRICE $1.00 AND UP

Establish your own profitable PHOTO-ENGRAVING business. Make cuts for newspapers, printers, and advertisers. Make etched name plates, plaques etc. Instructions furnished, no experience necessary. Sold direct from factory since 1931. First five hundred cuts sold locally or by mail will pay for plant and pay you well for your time. Write for FREE catalog.

TASOPE DEPT. PS-9 AURORA, MO.

NEW AUTOMATIC DEFROSTER

ONLY $7.95

YOU MAKE UP TO $4 ON EVERY FAST SALE!

Millions of defroster attachments sold at $12.50 and $9.95. Now — with new guaranteed HOLWIN at $7.95 demand reaches new high peak. Men selling as many as 10 and 12 a day — right now. Your profits big — as high as $4.00 cash on every sale. Converts any old style refrigerator into automatic defroster in 10 seconds. Just plug in. Terrific demonstrator. Women crazy for it at this price.

NO CHARGE for complete selling kit and offer of sample demonstrator. Rush name. If you've ever sold anything you'll clean up with HOLWIN. All mailed Free. Send name today for $140-a-week opportunity.

DEFROSTER SALES CO., 415 LaSalle, Dept. H-9-P Chicago 10, Ill.

FREE SEND NAME
Don't buy until you're satisfied. Rush name for free sales kit. Offer of demonstrator sample to all who answer this ad. Sales skyrocketing every day. Rush name for big money.

Copyrighted material

TRAIN AT HOME IN YOUR SPARE TIME

GET THE MONEY AND SECURITY YOU'VE ALWAYS WANTED!

L. J. ROSENKRANZ, President, National Schools, the man who has trained many, many men like YOU. Men who now own successful, respected businesses of their own. Men who hold important, high-paying positions in famous companies. You CAN be a success. Mail coupon for more details.

Let Me Show You How! Mail the Coupon for My FREE Books!

Each book has page after page in color. Gives you the complete story about my proved training method... tells how quickly it can train you for a secure, high-paying job. Don't wait. Get the facts. Send today for my valuable books on Radio-Television or Automotive-Diesel. Check the coupon at right and mail it to me today. Absolutely no obligation.

NO SALESMAN WILL CALL!
I'll send you a **FREE SAMPLE LESSON TOO,** if you act fast! Shows how easy it is to learn with National Schools Home Training.

DON'T PUT IT OFF...MAIL TODAY!

NATIONAL SCHOOLS, Dept. C-92
4000 South Figueroa Street
Los Angeles 37, California

Mail in envelope or paste on penny postal card

Send me *Free* the book checked below and the sample lesson. I understand no salesman will call on me.

☐ **"MY FUTURE IN RADIO-TELEVISION & ELECTRONICS" OR**
☐ **"MY FUTURE IN DIESEL-AUTOMOTIVE & ALLIED MECHANICS."**

NAME _____ AGE _____

ADDRESS _____

CITY _____ ZONE ____ STATE _____

☐ Check here if you were released from the service less than 4 years ago.

Let National Schools – a resident-training school for nearly 50 years–train you at home for today's unlimited opportunities in Radio-TV or Automotive-Diesel. National Schools is one of the largest schools of its kind in the world. It has 4 big buildings of modern shops and labs. Its faculty is considered tops. You learn fast from easy lessons –all perfected under actual shop conditions. Approved for eligible vets.

Earn Extra Money while you're learning! I'll show you how!
EASY TERMS • FREE GRADUATE SERVICE
Mail coupon today—find out more!

WHICH HIGH-PAYING FIELD DO YOU WANT?

TODAY'S SHORTAGE OF TRAINED TECHNICIANS CREATES CHANCE OF A LIFETIME FOR YOU...IN EITHER FIELD!

RADIO-TELEVISION & ELECTRONICS

JOB SECURITY! BIG MONEY! FOR YOU IN TODAY'S EXPANDING INDUSTRIES!

Think of it! With guided missiles, radar and other electronic devices so important to national defense. With big, new developments in color TV. With over 90,000,000 home and auto radios, over 12,000,000 TV sets. With more than 3100 radio stations...over 100 TV stations–and more building every day–imagine the terrific opportunity you have!

You Train at Home—In Your Spare Time

With National Schools Master Shop Home Training, you master *all* phases of Radio-Television-Electronics. You learn fast from hundreds of pictures and diagrams. All lessons have been developed and tested in National Schools famous shops and labs. No wonder your National Schools training is so up-to-date, practical, interesting. And so easy!

LOOK! WE SEND YOU ALL THESE PARTS! —and you keep them!

We send you lots of standard professional parts. You do lots of practical experiments. You learn step by step. Until you can build the big Superheterodyne Receiver you see above–and other important test units. Mail the coupon–today.

I TRAIN YOU FOR GOOD-PAYING JOBS LIKE THESE
Radio Station Engineer; District Service Manager; Aircraft Radio Inspector; Inspector Technician; Own your own repair shop; Service Specialist; Special Civil Service Positions; Sound Truck Operator; Complete Television Service and many others.
Thousands of National Schools graduates have jobs like these. Why not you? Start your career - be sure to mail the coupon today.

Only National Schools Gives You This Professional Multi-Tester

You get this factory-made new Multi-Tester ...an important instrument every Radio-TV man must have.

OR

AUTOMOTIVE-DIESEL AND ALLIED MECHANICS

GREATEST DEMAND FOR TRAINED MEN IN HISTORY! NOW IS YOUR CHANCE!

What an opportunity! With over 8 million older cars needing big service and repair jobs. With defense industry having more high-paying jobs than they can fill. With the Armed Forces offering quick advancement to trained mechanics. YOU ARE NEEDED as never before! Now you can get the good pay, security, the satisfaction of doing what you *want* to do! Don't delay–mail the coupon NOW!

Right in Your Own Home!

You learn all about Gasoline Engines, Diesel and Special-Fuel Engines, Automotive Tune Up, General Garage Mechanics, Auto Electrical Service. You get complete training for this great, growing industry.

Yet National Schools Home Training is easy! Because it's based on actual shop methods in National Schools big resident school. Mail the coupon for more details–NOW.

National Schools Gives You All These Tools

You start out owning the tools of your trade. A kit of standard, professional tools and equipment. They're all part of your course!
–And you keep them–they're yours!

I Offer You All These!
Basic Lesson Texts. Diesel Installation & Maintenance Instructions. Spare Time Lessons. Engine Service Manuals. Engine Repair Drive Systems. Diesel Electric Power Texts. Special Thermodynamic Instruction.

WHICH OF THESE HIGH-PAYING JOBS WOULD YOU LIKE?

MOTOR TUNE UP SPECIALIST
DIESEL ENGINE SPECIALIST
FARM EQUIPMENT MECHANIC
YOUR OWN GARAGE OR REPAIR SHOP
GENERAL GARAGE MECHANIC
PARTS DEALER
AUTO ENGINE REBUILDING
FUEL INJECTION SPECIALIST

You can *have* secure jobs like these. Just mail the coupon–and find out!

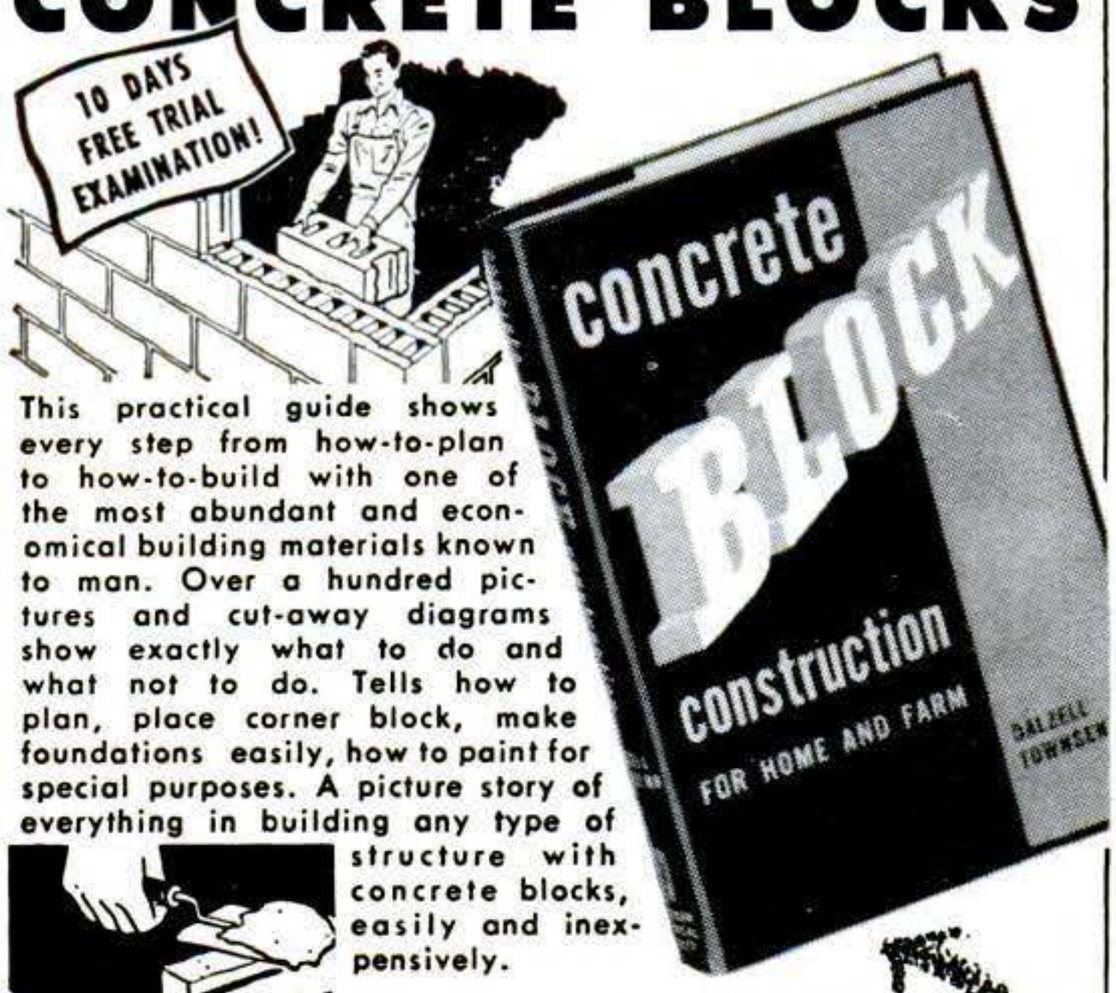
Attention: Men Going into the Service Soon!

With National Schools training in Radio-Television or Automotive-Diesel, you have the opportunity to get into special service classifications. That means higher pay and grade, more prestige–right away! This is important–so be sure to mail the coupon today without fail.

NATIONAL SCHOOLS

TECHNICAL TRADE TRAINING SINCE 1905
LOS ANGELES 37, CALIFORNIA

NOW YOU CAN BUILD IT WITH CONCRETE BLOCKS



This practical guide shows every step from how-to-plan to how-to-build with one of the most abundant and economical building materials known to man. Over a hundred pictures and cut-away diagrams show exactly what to do and what not to do. Tells how to plan, place corner block, make foundations easily, how to paint for special purposes. A picture story of everything in building any type of structure with concrete blocks, easily and inexpensively.

Here's how to apply Mortar

Here's how little this book costs you . . or if you don't keep it after 10 days trial, return it and you owe nothing. $2.75

CARPENTRY FOR EVERYONE

A clear explanation of modern carpentry construction including framing, roof constructions, general carpentry work, exterior and interior finish of buildings, building forms and working drawings, and farm buildings. Covers everything you need to know about lumber, tools, joints and splices, floors, stairs, partitions, rafters, etc. Gives short cuts and tricks used by the master carpenter. Easy to understand. 504 pages, 580 illustrations. **$2.50.** Use 10 day no-cost trial coupon below.

INSTALL & REPAIR YOUR OWN PLUMBING

How to Design and Install Plumbing by A. J. Matthias, Jr. A completely up-to-date guide that fits the needs of the beginner yet so complete that even the master plumber can pick up some new tricks of the trade. Contains hundreds of illustrations, full size blueprints, specifications and instructive details for septic tanks, storm drainage, soil pipe, water supply, fixtures, traps, drains, pumps, etc. An outstanding feature is complete design and installation of plumbing in a modern six-room, two bath residence. 349 illustrations, 442 pages. $3.95. Use coupon.

Mail this coupon today—10 days trial at no cost to you

American Technical Society, Dept. C-620
848 East 58th Street, Chicago 37, Illinois

Please rush me the following books I'm checking below to examine at home. If I'm not convinced these books will help me save thousands of dollars by doing my own building and planning, I may return the books and owe nothing.

Examine at home at no cost.

- ☐ CONCRETE BLOCK CONSTRUCTION FOR HOME AND FARM.....$2.75
- ☐ CARPENTRY $2.50
- ☐ HOW TO DESIGN AND INSTALL PLUMBING $3.95

Other How-to-do-it books, profusely illust.

- ☐ Painting and Decorating $1.75
- ☐ Electric Wiring—Residential and Farm.$3.95
- ☐ How to Insulate Home & Farm Bldgs...$3.00
- ☐ Bricklaying—Skill and Practice.....$3.00
- ☐ Steel Square $2.25

Name_____

Address_____

City_____ State_____

- ☐ Ten day no-cost-trial. If I keep books, will remit by check or money order.
- ☐ Send C.O.D. Same return privilege—money refunded.
- ☐ I'm enclosing $_____now to save postage—same return privilege—money refunded.

PRESS FLASH CAMERA OUTFIT

The only camera with a built-in flash unit. This combination comes absolutely complete, nothing else to buy. Includes: SPARTUS PRESS FLASH Camera • Zipper gadget bag • 4 flash bulbs — easily removed, easily replaced • Roll of 120 film — gives you 8 big prints 2¼ x 3¼ in crisp detail. **$19.80.**

Try it for 10 days before you buy

SHIPPED ON APPROVAL
NO MONEY WITH ORDER—NO C.O.D.

If completely satisfied send $3.80 and pay balance at rate of $4.00 per month. — NO INTEREST OR CARRYING CHARGES ADDED. If not completely satisfied return, no explanation necessary.

KAPNER HARDWARE, Inc., Dept. A-49, 2248 Second Ave., N. Y. 29, N. Y.

$5000.00 IN PRIZES DRAW MY HEAD

1st & 2nd PRIZES

COMPLETE $130 ART COURSE

80 OTHER VALUABLE PRIZES

Your Drawing Judged and Answered. Take this test and try for a thrilling prize. Discover if you have profitable Art talent. You may gain a lifetime of happiness and high earnings if you mail your drawing today. Amateurs only. Our present students not eligible. Copy this girl 4" to 6" high in pen or pencil. Mail to us. None returned. Winners notified. New $5,000 contest each month. Your drawing will be entered in Contest for month in which we receive it. Send your drawings now with your name, address, age and occupation. Enter today.

WALLER ART EXCHANGE Studio 146, 1000 N. Charles St. Baltimore 1, Maryland

SEND FOR THIS FREE!

Make money. Know how to break and train horses. *Write today for this book FREE*, together with special offer of a course in Animal Breeding. If you are interested in Gaiting and Riding the saddle horse, check here ( ) *Do it today—now.*

BEERY SCHOOL OF HORSEMANSHIP
Dept. 589 Pleasant Hill, Ohio

WALKIE TALKIES $4.99 Set of 2

POCKET SIZE —ELECTRONIC VOICE POWERED

No tubes, batteries, adjustments, license or permit needed! Guaranteed to work anywhere up to ¼ mile with extra wire. Swell for room to room—garage to house, etc! Your own private, talk-listen phone. Not war su plus. Brand new. Guaranteed. Two complete units with wire —READY TO USE!

SEND $1.00 deposit and pay postman $3.99 plus postage charges or send $4.99 for postpaid delivery. Sold **only** by mail from:

MIDWAY COMPANY, Dept. WPS-9, Kearney, Nebraska

Make MONEY EASY!

Sell Famous NEW STARK FRUIT TREES

Cash in now taking orders for world-famous Stark Bro's Apple, Pear, Peach, and other hardy, quick bearing fruit trees. Sensational U.S. Patented varieties and new Hardy Dwarf Trees make selling easy. Boost earnings selling gorgeous flowering shrubs, roses, ornamentals to home owners, farms, etc... Enormous demand! Stark Bro's 137 year old reputation known the world over—LINE UP NOW WITH THIS OLD ESTABLISHED, RELIABLE COMPANY.

FREE OUTFIT—*Send No Money!*

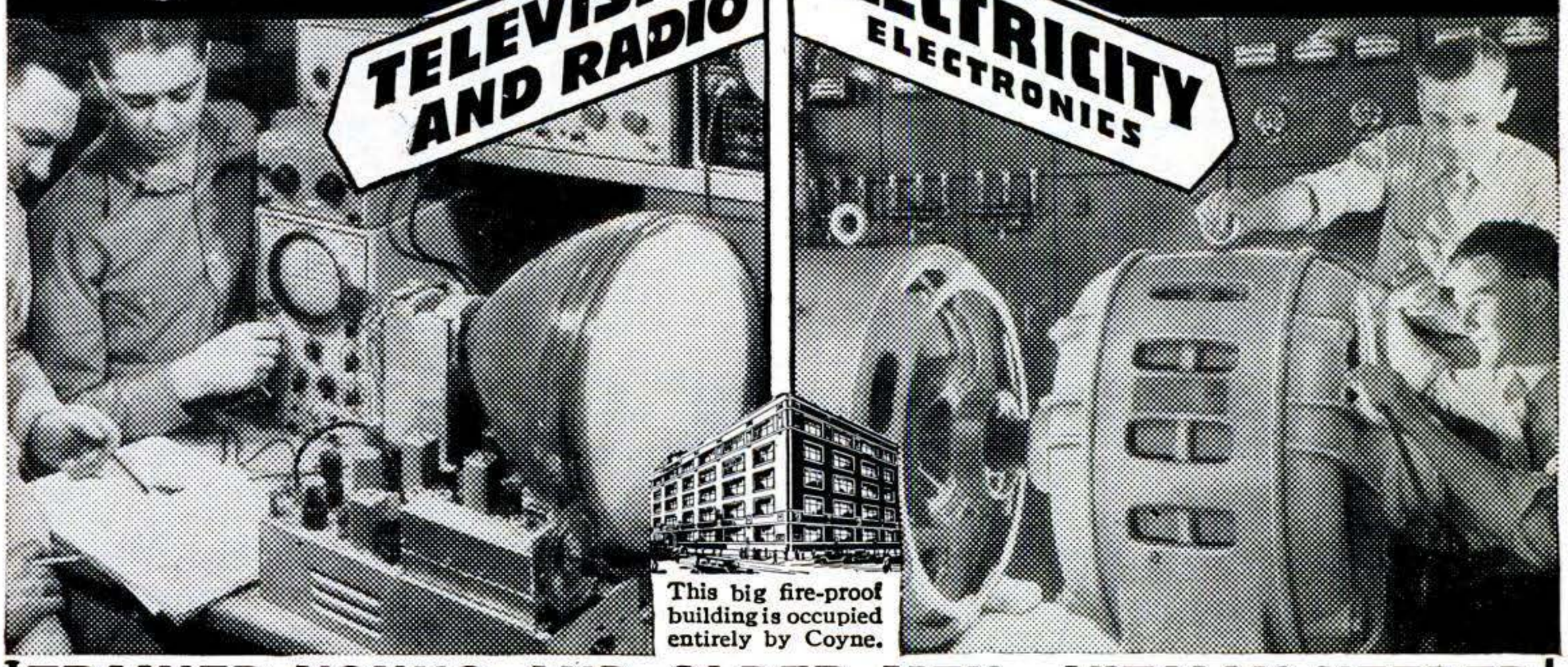
Just send name and address. We furnish everything you need to make money. *All Free to you.* Giant Demonstration Outfit, beautiful Color Plate Book...all included. No experience needed. Rush name today—biggest money making weeks just starting!

STARK BRO'S, Desk 2993, Louisiana, Missouri

Copyrighted material

Train QUICK in Big Coyne Shops

GREAT OPPORTUNITY FIELDS!



This big fire-proof building is occupied entirely by Coyne.

TRAINED YOUNG AND OLDER MEN—VITALLY NEEDED IN NATION'S DEFENSE AND MILITARY PROGRAMS

Where do you fit in today's gigantic Defense Program and Industrial expansion? Trained young and older men will play an important part in vital fields. Electricity and Television-Radio are essential to our Defense Program in both Industry and Armed Forces. Don't wait to be assigned to a dull, low pay, no future job. Get training Quick at Coyne and be ready to pick one of many job opportunities or get a better rating if drafted. Today it's not how young or how old you are that counts, but how prepared you are for jobs that demand skilled men. So, qualify now for:

1. BETTER RATING, HIGHER PAY IF DRAFTED.
2. A VITAL JOB IN INDUSTRY, IF NOT IN DRAFT.

LARGEST, OLDEST, BEST EQUIPPED SCHOOL OF ITS KIND IN THE U.S.

NOT "HOME-STUDY" LESSONS

Our famous Television-Radio Practical-Technical method gives you practical experience on a massive outlay of equipment. Not by correspondence lessons, but actual shop work plus necessary technical training. You are trained right here in the great Coyne shops that have been training men and young men for over 50 years.

TELEVISION-RADIO

A great opportunity field and vital to Defense. Here at COYNE you're trained for Construction, Testing, Trouble-Shooting on Radio, Public Address, Sound Units. Training includes FM, Television Installations, Servicing, etc. Many Coyne trained men in good jobs or own well paying Television-Radio businesses of their own.

ELECTRICITY

INCLUDING INDUSTRIAL ELECTRONICS

The Power behind the entire Defense Program. Big future in Power Plant Work, Motors, Armature Winding, Home and Factory Wiring, Appliances, Refrigeration, Maintenance, Illumination, etc. Lifetime job service to Coyne graduates. Send for BIG FREE BOOK.

Mail Coupon for Big FREE Book!

Whether you prefer Television-Radio or Electricity, train on actual equipment at Coyne. We will send you a Big, fully Illustrated Book. indicate below, which course interests you most. **No salesman will call.** Mail coupon TODAY.

COYNE 53rd YEAR

START NOW—PAY LATER

Don't let lack of money hold you back. You can finance most of your tuition and pay for it later, in easy monthly payments. **Special plan for men of draft age.** We'll help you get part time work, if you need it, to help pay living costs while at Coyne.

G. I. APPROVED

B. W. COOKE, President

COYNE SCHOOL

A TECHNICAL TRADE INSTITUTE CHARTERED NOT FOR PROFIT
Established 1899
500 S. Paulina Dept. 62-73H
Chicago 12, Illinois

ELECTRICITY ★ TELEVISION ★ RADIO ★ REFRIGERATION ★ ELECTRONICS

B. W. Cooke, President
COYNE SCHOOL, 500 S. Paulina St.
Dept. 62-73H, Chicago 12, Ill.

Send me your **Big Free** book, and details of your special plan for men of draft age. I am interested in field checked below. This does not obligate me.

☐ TELEVISION-RADIO ☐ ELECTRICITY

NAME.....

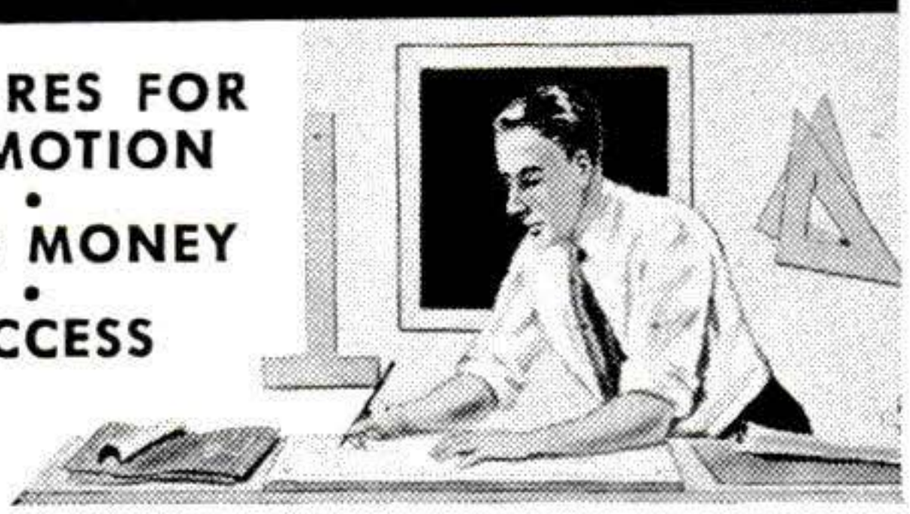
ADDRESS.....

CITY.....STATE.....

Copyrighted material

C.T.C. TRAINING IN DRAFTING

PREPARES FOR PROMOTION • MORE MONEY • SUCCESS



"Here I am at work making good money as a draftsman. I'm glad I sent the coupon to Chicago Tech for that Free Trial Lesson and found out how easy it is to learn Drafting in spare time at home. Today, I feel secure in my job. What's more, I feel I'm slated for promotion and more pay."

LEARN IN SPARE TIME—AT HOME!

(or at the College in Chicago)

A few hours of pleasant home study every week—that's all. All the tools you need; drawing outfit included. This tested method—developed over 48 years of C.T.C. progress—prepares men quickly for good positions in industry.

FREE INFORMATION — SEND COUPON

To prove to you how easy it is to learn Drafting at home by the Chicago Tech method, we will send you this FREE TRIAL LESSON. No charge for this lesson, now or later. Fill out and mail coupon, or send post card today.

CHICAGO TECHNICAL COLLEGE

M-220 Tech Bldg., 2000 So. Michigan Ave., Chicago 16, Illinois

Mail me FREE Lesson with information about big opportunities in DRAFTING.

Name.....Age.....

Address.....

City.....Zone....State.....

INTERNATIONAL ROTARY

HI-SPEED CUT IT DRILLS — COPE-SAW IT SAWS — DRILL-BIT IT REAMS

DRILL, SAW, REAM . . . metal, pipe, wood, plastic, Transite, etc. Use with any electric drill, slow drill press, lathe or milling machine. Drills own starting hole—upper part of bit is used to cut, saw or ream circles, ovals, squares or scrolls. Easy to operate. Ideal for carpenters, mechanics, electricians, plumbers, hobbyists, many others. Abrasive resistant, high speed steel. Flutes ground from solid. Will withstand severe continuous use without breaking. Resharpened at no charge. Takes place of up to $50 in tools. ¼" diameter, 2" cutting sections, total length 3½". Also available specially designed for wood or metal and in 2⅜" and 1¾" lengths. Write for details. Specify all-purpose bit. Shipped same day. Money-back guarantee. Dealer inquiries invited.

SEND CASH, CHECK OR MONEY ORDER

Manufactured and distributed by:

INTERNATIONAL TWIST DRILL CORP.

618 Wyandotte, Rm. 695 Kansas City 6, Mo.

only $3.95 POST PAID

Almost Overnight!

YOUR OWN PROSPEROUS BUSINESS OR PLENTY OF SPARE TIME CASH!

$25 per week, easy, in spare time. Make $10,000 per year . . . or more! . . . full time!

Here's your chance to get in on the ground floor with an established, mass-sales product! Our Automatic Defroster, with genuine Telechron timing motor, converts any refrigerator to "Automatic Self-Defrost" in just 3 minutes. No tools . . . just plug in. We furnish striking proof it pays for itself in savings! All you do is make quick installations for FREE TRIAL . . . 4 out of 5 who try it are glad to buy it!

PROSPECTS EVERYWHERE! Write for Free Details! The whole country is sold on automatic defrost! Over 25 million refrigerators need conversion. You risk nothing. Start spare-time, let us help you grow big. Let us rush you full details of big profits, our amazing FREE TRIAL PLAN, and how you can get started! No obligation. Send us your name today! Time Products Co., 1350 N. Jackson St., Milwaukee, Wis., Dept. C-9.

LEARN FASCINATING

Leathercraft

Make your own bags, belts, wallets, etc. Learn fascinating, profitable leathercraft in spare time. Send 25c for valuable Catalog, has over 200 photographs. (refunded first purchase).

BURTONS LEATHERCRAFT

Dept. PS-9, 1755½ Glendale Boulevard, Los Angeles 26, Calif.

LEARN MEAT CUTTING

through actual practice. Profitable Meat Cutting and Self Service Meats taught easily, quickly. LEARN BY DOING at Toledo in just eight short weeks under actual market conditions. For beginners or men with experience. All subjects taught thoroughly and completely. Diploma. Job help. Get store of own. People must eat. School in operation over 25 years. Approved for GI training. Send today for FREE illustrated catalog. No obligation.

NATIONAL SCHOOL OF MEAT CUTTING, Dept. 51-J, Toledo 4, OHIO

ENORMOUS PROFITS CASTING AT HOME

Write today for NEW FREE CATALOG

Learn to cast thousands of perfect figurines, plaques, book ends, ash trays, etc. Start **NOW—NO EXPERIENCE. LITTLE CAPITAL** needed. Earn **GREAT PROFITS** with **X.L. RUBBER MOLDS.** X.L. Rubber, Pts. **$2.50**, Qts. **$4.00** (postage extra); Models and enough rubber for 3 molds . . . **$1.50** postpaid.

PLASTIC ARTS STUDIO 3403 S. Madison St. Dept. 3 MUNCIE, IND.

Free! VITAMIN GUIDE BOOK

Tells about "Red" Vitamin B-12

No longer need you pay $4, $5, $6, up to $15 per 100 capsules for the same vitamins your Doctor advises. After 20 minutes reading of this Guide Book you will understand vitamins as never before. You will not be fooled again by confusing, mysterious labels; you will be able to pick up any vitamin product and know if you are getting your money's worth. Stop buying blindly. This free book shows how to save up to 40% on vitamins, including the sensational new wonder vitamins Folic Acid and "Red" Vitamin B-12, prescribed for blood building and many anemias. Send postcard today to VITAMIN-QUOTA, Dept. 861, 880 Broadway, New York 3, N. Y. or Dept. 861, 1125 Crenshaw Blvd., Los Angeles 19, Calif.

Copyrighted material

NOW! LET INDIANAPOLIS SPEEDWAY CHAMPIONS SHOW YOU

106 EASY WAYS TO GET **MORE SPEED & POWER!**

Get 42-47 Miles

PER GALLON FROM YOUR CAR!

BURN WATER SAVE GAS!

(U. S. Agricultural Dept. Scientist say new water alcohol combination can save you money!)

DRIVE 8,000 MILES WITHOUT OIL CHANGE!
Zoom From 0 to 60 M.P.H. in 12 Seconds! Add 30 M.P.H. to Top Speed Of Your Car!
(Many results proved in official testing labs.)

ANY CAR! ANY MAKE! ANY YEAR!

HERE'S PROOF! Ever notice how your car runs better on damp days? Engineers and Govt. testing bureaus now tell us what is actually taking place is moderate water injection, mixing with gas to give tremendous explosive power! *(And test after test proves less engine wear and corrosion!)* Now, easy picture directions show you how to take an ordinary Mason jar and a few inches of rubber hose, attach this simple, powerful "supercharger" to your carburetor, *and suddenly discover sensational new power!... and gas savings up to 33⅓%!* This is only 1 of the 106 new motor miracles any car owner can do with new SPEED & POWER MANUAL!

NEWEST SPEED & POWER MANUAL! No Experience Needed—Easy A-B-C Picture Instructions Show How To Mix, Burn Water & Gas For Amazing Speed & Economy—Resurface Cylinder Walls, Stretch Car Life Without Taking Engine Apart—Do Speed & Power Tuning With Screwdriver—Restyle '37-'47 Models to Expensive "Foreign" Look—Get Flash Starts, Top Performance, Hi Resale — Beat High Cost of Minor Repairs — SAVE HUNDREDS OF DOLLARS A YEAR!

INDIANAPOLIS: *Years ahead of the industry! Balloon Tires:* Introduced in Indianapolis . . . 1917! Industry adopted in 1923! *Self-Starter:* Introduced in Indianapolis . . . 1916! Industry adopted in 1928! *Ethyl Gas:* Introduced in Indianapolis . . . 1916! 1st sold Nationally — 1925! *Other Indianapolis Firsts:* Rear view mirror — front wheel drive—super charge—4 wheel brakes — foolproof spark plugs — demountable wheels—better springs—etc.

No Guesswork — Everything You Have To Know!

Restyle, Repower Your Car! Make '37-'47 model look, run like '50!

Here for the first time is the only book of its kind ever published—a show-how, do-it-yourself SPEED & POWER MANUAL that shows you how to save 33⅓% on gas bills—80% on oil bills—90% on repair bills—*add $300 to the resale value of your car!* With sensational new discoveries of Automotive Engineers, Research Scientists and Indianapolis Mechanics, now it's easy to add new *surging* Power, Life, Mileage, Economy to your car! . . . whether it's a 15 year old jalopy or a shiny new '52 model — and SAVE $75 to $300 THIS YEAR!

Clear — Simple — Complete — Easy as A-B-C with "Show-How" Pictures

Secrets Of Wizard Mechanics! Start dead-battery car with bumper jack!

This new SPEED & POWER MANUAL is so complete, so easy to follow, so FOOL-PROOF, it's like having a master Indianapolis mechanic right at your elbow! Written in plain language with simple *show-how* drawings and cutaway diagrams anyone can understand! You not only read what to do, YOU SEE HOW IT'S DONE! It's so easy when you do it the SPEED & POWER way, and right from the start you'll learn the 30 to 40 quick tricks to get flash starts, lightning pickup, 15 more horsepower, amazing fuel economy, plus hundreds of tips like using simple gas and oil mixtures to add instant power and years of driving life to your car, *even if you've never looked under a hood before!*

Not A Step Overlooked — For Beginner Or Expert

Learn Speed and Power Tuning! Simple adjustments for new pep.

1001 MONEY SAVING TRICKS of the master mechanics crammed into 1 great book! How to resurface cylinder walls in 10 minutes *without removing 1 part from your engine!* Stop power waste with 25¢ worth of graphite in your crankcase. How to double explosive power of your engine. How to fix-it-yourself; spot trouble, make emergency repairs with the tools in your car. Cut engine wear; stop summer overheating. Amazing *jiffy-car-polish* tricks. So complete it even has step-by-step sections showing how to rebuild, repower even junkyard Fords, Hudsons, etc., into sleek, 180 horsepower, 126 mph speedcars, with push-button doors, plastic tops, custom grillwork, exclusive redesigning with "pickup" parts, for foreign car features! It's the biggest, most complete, up-to-the-minute volume of automotive information ever published for the average car owner, yours FREE FOR A WEEK if you send TODAY!

WHAT EVERY CAR OWNER WANTS TO KNOW!

Partial Contents:

Water-alcohol injection systems. How they work and why.
How to make and install a Mason-jar water injector.
10 ways to save on gas.
8 ways to save on oil.
Special fuels, carburetion.
Better carburetor action.
Hi-test vs. regular gas.
Treated gas and oil.
Air-fuel mixture adjustment.
New type carburetors.
Building your own dual manifold —dual carburetor.
Using adjustable jet screws and air-flow needles.
Supercharging your car.
Speed and power tuning.
Increasing top car speed.
Increasing pickup on hills.
Flash starts in icy weather.
Re-working engine, ignition.
Dual ignition systems.
Easy ways to higher horsepower.
Eliminating tappet noise.
Eliminating carburetor flooding, fuel pump surge, motor cut-out, fuel waste.
How to eliminate overheating.
Engine lubrication magic: lifetime oil filters.
1 minute spark plug checkup.
Hi-compression conversions.
Sport and model changes.
Building your own roadster.
Hard chroming tricks.
Customizing, restyling ideas.
10,000 extra tire miles.
Touching up nicks, dents, for perfect blend and finish.
Mounting tires on rear.
Calif. style convertible tops.
How to preserve car finish.
20 ways to increase resale $.
How to have automatic hill holder—6 forward speeds—no clutch shift, in present car.
Emergency repairs made easy.
Building a practical jet engine.
12 tips to A-1 car condition.

***PLUS:* Latest Information on Care, Replacement, Repair of:**

Fuel pumps—ignition, electrical systems—starter—battery—generator —body, chassis care—new silicone polishes—tires, brakes, cooling system—lubrication—oil filters—directional signals—accessories—performance boosters — lights, switches — shocks — ventilating system — transmission—rear end—engine—bearings—carburetor—speedometer cable—windshield wipers—steering wheel—etc.

. . . and much, much more!

SEND NO MONEY Mail Free Gift Coupon NOW

all 3 FREE
(even if you return book)

1. Speed and Special Equip. Catalog. 36 pages, reg. 25c value. *PLUS:* Free membership National Discount Club saves you up to 45% on auto supplies and products.

2. How To Obtain 150 Miles Per Gallon. Amazing economy secrets! Thousands of copies sold at $1.

3. Economy In Driving. Can cut your bills in half! 48 pages, reg. 50c value.

ACT NOW

Special Offer Gives You 3 Valuable Handbooks FREE!

Send TODAY and get 3 extra handbooks described here (reg. $1.75 value) yours FREE with SPEED & POWER MANUAL. Examine for 7 days. If not convinced book will pay for itself 10 times over in 1 week, save you $75-$300 in 1 year, return for money back, but *keep 3 extra handbooks as FREE GIFT!*

NEWHOUSE AUTOMOTIVE INDUSTRIES, DEPT. DS
24 E. 67 St., New York 21, N. Y.

Gentlemen: Without obligation please rush me new SPEED & POWER MANUAL for NO RISK examination and trial. I agree to pay postman on arrival $1.98 plus postage. If I am not satisfied, I may return in 7 days for full money back.

Also send me ABSOLUTELY FREE, the 3 handbooks described here (reg. $1.75 value), plus my FREE MEMBERSHIP in National Discount Club. I understand these are mine FREE, whether or not I keep SPEED & POWER MANUAL.

NAME _____

ADDRESS _____

CITY _____ ZONE ____ STATE _____

☐ SAVE MORE! If you send $1.98 with coupon, we pay all postage charges. Same money back guarantee.

NEWHOUSE AUTOMOTIVE INDUSTRIES
Dept. DS 24 E. 67 St., New York 21, N.Y.

Copyrighted material

"Put Your Finger" ON Any Car Trouble IN A JIFFY!

Handy New Guide Lists 2000 Causes of Faulty Operation, Noises, Breakdowns

SAVE TIME AND WORK on *any* auto repair job by being able to "put your finger" on exactly what's causing the trouble—*right from the start!* New, indexed TROUBLE-SHOOTER GUIDE—prepared by the Editors of the world-famous MOTOR'S Repair Manuals—lists over 2000 specific causes of car and truck troubles; helps you find the one you're after FAST. Book fits right in your pocket for instant reference. Spiral binding lets book stay open while you work. Cross-section PICTURES also included.

If car has Fan Belt noise—turn to Fan Belt Section for 8 specific things that can be wrong. MOTOR'S TROUBLE-SHOOTER helps you track down noises, knocks, misses, breakdowns — faulty operation from radiator to rear end. Covers engines, clutches, brakes, ignition, new automatic transmissions, etc. Gives quick help to beginners as well as experienced repair men!

HOW TO SPOT—

87 Automatic Transmission Troubles. 8 Causes of Connecting Rod Noise. 87 Checks for Poor High-Speed Performance, Lack of Power. 82 Causes for Engine "Misses." 17 Checks for Pre-Ignition or Spark Knock. 45 Causes of Excessive Oil Consumption. 14 causes of Crankshaft Noise. 73 Checks for Clutch Troubles. 66 Causes of Rear-Axle Trouble. 150 Checks for Front Suspension and Steering Troubles. 81 Causes of Brake Trouble. 27 Checks for Faulty Springs and Shock Absorbers. 84 Different Types of Wheel Troubles . . . AND MUCH, MUCH MORE!

Try Book for 7 Days without obligation!

SEND NO MONEY—Mail Coupon—When postman delivers book, pay him $1, plus postage and C.O.D. charges. (Or send $1 with coupon, and we pay shipping charges.) If not delighted, return book in 7 days for full refund. **MOTOR Book Dept. Desk EL, 250 W. 55th St., New York 19, N. Y.**

New "Dope" On Automatic Transmissions Covers:
- HYDRAMATIC
- BUICK DYN-FLOW
- CHEVROLET POWERGLIDE
- PACKARD ULTRAMATIC
- STUDEBAKER AUTOMATIC

MOTOR Book Dept., Desk EL,
250 West 55th St., New York 19, N. Y.
Rush me MOTOR'S work-saving TROUBLE-SHOOTER. I will pay postman $1 on delivery, plus 43c postage and actual Gov't. C.O.D. charges for each copy ordered. Unless completely satisfied, I may return book in 7 days and my money will be promptly refunded.

Name . . . . . .
Address . . . . . .
City . . . . . Zone . . State . . . . . .

☐ **SAVE 43c POSTAGE, C.O.D. CHARGES.** Check if you send $1 with coupon, then we pay shipping costs. Same refund guarantee.

20 POWER! WHISPER WEIGHT 7½ OUNCES

2½ TIMES STRONGER THAN BINOCULARS

USED OFFICIALLY BY THE U. S. ARMED FORCES

Whisper Weight—7½ ounces. Easy to hold—Easy to focus. Ideal for indoor, outdoor sports, vacationing, trips, long distance spotting. Pocket size measures only 6¼" closed 13½" open.

NOT A CHEAPLY MADE TOY TELESCOPE. But an **all metal,** precision machined (threaded fittings throughout) Precision ground, **achromatic** telescope that invites comparison. Bears the famous UNITED "Seal of Quality" because they are UNI-COATED, assuring buyers that an application of magnesium fluoride has been applied to the interior sides of the VITAL front Achromatic and rear Ocular lense so users can view distant objects (even those miles away) clearer, brighter and in sharper detail than ever before. Made in American occupied Japan where skilled German optical craftsmen tutored local optical workmen in advanced techniques. It explains why the quality is so high and the price so low. UNCONDITIONALLY GUARANTEED. Try for 30 days. If not absolutely satisfied return for an immediate unquestioned refund of your money. Introductory price. Cash orders postpaid. C.O.D.'s include $2.00 deposit **$8.95** Tax Free

UNITED SEAL OF QUALITY

UNITED BINOCULAR CO., United Bldg., Dept. ARF-7216
9043 S. Western Ave., Chicago 20 **DEALERS WANTED**

FREE FOR ASTHMA

If you suffer with attacks of Asthma and choke and gasp for breath, if restful sleep is difficult because of the struggle to breathe, don't fail to send at once to the Frontier Asthma Company for a FREE trial of the FRONTIER ASTHMA MEDICINE, a preparation for temporary symptomatic relief of paroxysms of Bronchial Asthma. No matter where you live or whether you have faith in any medicine under the sun, send today for this free trial. It will cost you nothing.

Frontier Asthma Co. 169-T Frontier Bldg.
462 Niagara St. Buffalo 1, N. Y.

learn to HYPNOTIZE!

Command others with hypnotic power! Amaze everyone with your new spellbinding technique. New easy to master course teaches you this mystic art, quickly, expertly, professionally. Have subjects at your mercy. Make them obey your every desire. Send for this Valuable Book Now! Just pin $1 to this ad and "25 lessons in Hypnotism" will be mailed to you postpaid. Satisfaction guaranteed or your money back.

Books Publishing Co., 56 W. 24th St., New York 10, N. Y.

Find HIDDEN TREASURES

GEIGER COUNTERS for Uranium Detection (see at left). **TREASURE DETECTORS** for gold, silver, etc. Lightweight, ultra sensitive. None finer at **ANY PRICE.**

INFORMATION FREE.

Detectron CO.
5631 Cahuenga, No. Hollywood, Calif.

YOU GET $50 FOR SELLING ONLY 100 BOXES NEW '52 CHRISTMAS CARDS

to your friends and fellow workers, 21 for $1 and 50 for $1.25, with name on. You make up to 50c on each box. Send for Selling Plan and samples on approval. Costs nothing to try. Organizations and church groups raise money in this easy way. WRITE NOW.

MERIT CARD CO.
370 Plane St., Dept. 85 Newark, N. J.

Copyrighted material

Leonard C. Lane, B.S., M.A.
President of Radio-Television Training Association,
Exec. Dir. of Pierce School of Radio and Television

AMAZING NEW 2-FOR-1 OFFER

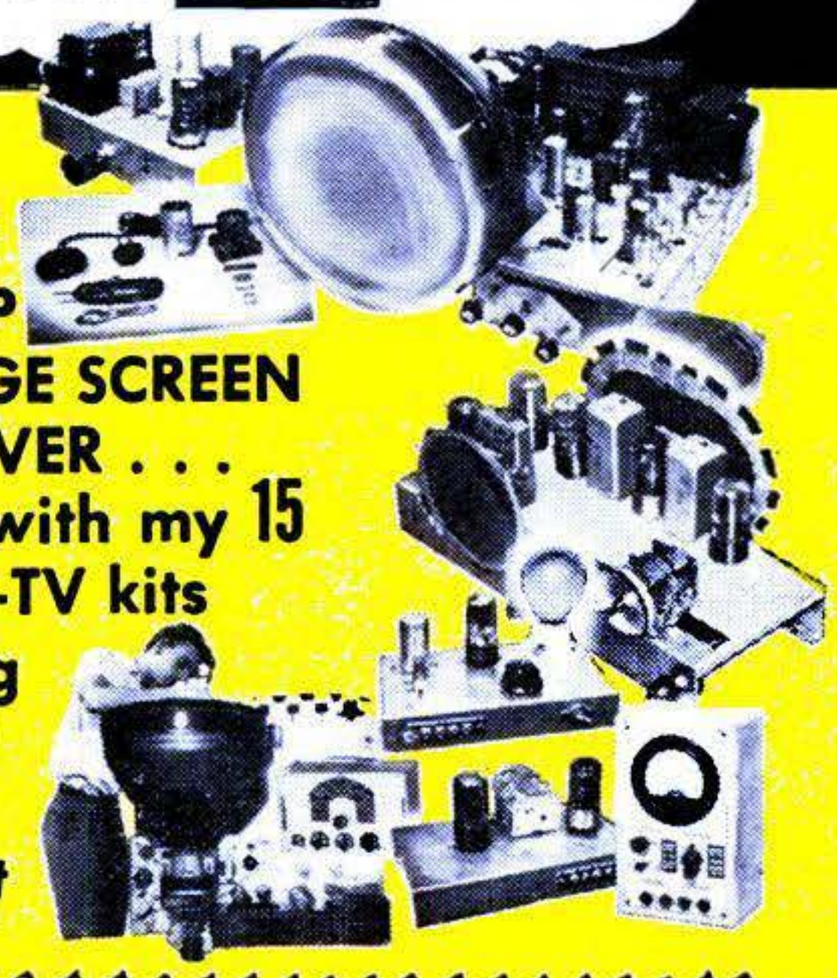
BE A LICENSED* TV TECHNICIAN

LICENSED TV MEN MAKE MORE MONEY

COMPARE RTTA'S EXTRA FEATURES

1. I furnish you ALL parts and equipment to build 15 big units, including your own COMPLETE TV RECEIVER. At the same time, I give you the training that will qualify YOU as a TV TECHNICIAN in America's booming TELEVISION & Electronics industries . . . *within months,* studying at home. Many of my students pay for their entire training from spare time earnings installing and servicing Radio-TV sets . . . start their own business.

2. Then—after you finish your training for a position as a full-fledged TV Technician . . . I help you qualify for the *better pay* BETTER JOBS that demand an FCC license, with my . . .



YOU BUILD AND KEEP THIS LARGE SCREEN TV RECEIVER . . . included with my 15 big Radio-TV kits Everything Furnished *At No Extra Cost*

FREE* FCC COACHING COURSE

- Prepares you for your FCC License
- Included at NO EXTRA COST

The Best Jobs in TV & Radio Require an FCC License

NOW! Advanced FM-TV Training For Men Who Know Radio

Prepares You For Higher Pay Jobs In A Few Months

COMPLETE theory and practical training course . . . complete with kits including large screen TV receiver.

FCC License Coaching Course Included FREE.

ROUND TRIP TO NEW YORK CITY—FARE FREE!

Yes, I pay your way to New York and return from wherever you live in the U. S. or Canada, after you finish your home study course. I give you two free weeks—50 hours of advanced instruction and shop training at the *Pierce School of Radio & Television.* You use modern electronics equipment, including student-operated TV and Radio stations. You go behind the scenes of New York's big Radio-TV centers—to study first hand. And I give you all this AT NO EXTRA COST! (Applies to complete Radio-TV course only.)

MY SIMPLE METHODS MAKE SUCCESS EASY!

I have helped hundreds of men—most of them with NO PREVIOUS TRAINING—get ahead in TV. Even with a grammar school education, you can master my practical methods where you use actual parts and equipment and "learn by doing".

VETERANS!

Eligible under new G.I. Bill? Be sure to check coupon below!

GOING INTO UNIFORM? Learn how you can qualify for military specialist ratings, and higher pay!

BIG MONEY IN TELEVISION FOR YOU

PREPARE NOW for the thousands of new job opportunities that will be available for you right in your home state, with lifting of government restrictions on new TV stations. As a well-trained technician, you can write your own ticket . . . get more success and happiness out of life. Don't delay. Mail the coupon today, and let my FREE BOOKS show you how easy it is.

MY GRADUATES HOLD GOOD PAYING JOBS

"Thanks to your training, I qualified for a good job as a Receiver Tester at Federal Telephone and Radio."
—Paul Frank Seier

"Your excellent instruction helped me get my present job as an airport radio mechanic for American Airlines."
—Eugene E. Basko

"I'm making good money in my own business, repairing and installing radio and TV sets — thanks to your training."
—Irwin Polansky

"I'll always be grateful to your training which helped me get my present fine position as Assistant Parts Manager"
—Norman Weston

RADIO-TELEVISION TRAINING ASSOCIATION

Approved as a Correspondence School under the laws of the State of New York

1629 Broadway, Radio City Station, New York City 19, N. Y.

NO SALESMAN WILL CALL!

BOTH FREE! SEND NO MONEY! MAIL NOW FOR MY NEW FREE BOOKS!

Mr. Leonard C. Lane, President
RADIO-TELEVISION TRAINING ASS'N
1629 Broadway, Radio City Station
New York 19, N. Y. Dept. S-9

Dear Mr. Lane: Mail me your two new books about your amazing 2 for 1 offer with no obligation to me. I UNDERSTAND NO SALESMAN WILL CALL.

NAME_____ Age____

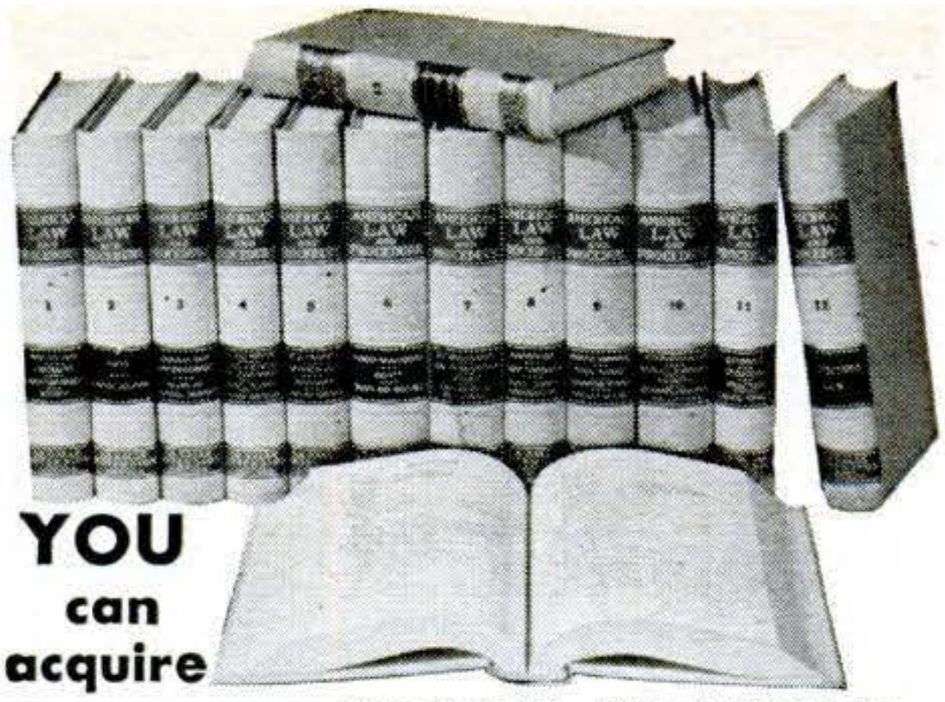
ADDRESS_____

CITY_____ ZONE____ STATE_____

I am Interested In:
☐ Radio-TV ☐ Advanced FM-TV

VETERANS! If qualified under G.I. Bill, check here ☐

Copyrighted material



YOU can acquire LAW NIGHTS AT HOME! L L.B. DEGREE

LaSalle's famous Law Library—used as reference in many Law libraries and Law offices—has enabled thousands to master Law surprisingly fast, in spare hours at home, for business and professional advancement.

These 14 remarkable volumes, compiled by leading professors and lawyers, cover the whole basic field of Law in condensed, orderly, simplified manner.

You advance rapidly with this great library, plus special lectures furnished. We guide you step-by-step with personalized Problem Method of instruction . . . you *learn by doing*—handling legal problems—not by memorizing rules.

Send for two FREE 48-page booklets, "Law Training for Leadership," and "Evidence," answering questions about Law and its value to you, and telling how LaSalle Law graduates are winning rapid advancement in business and public life. Mail coupon below. No obligation.

LA SALLE EXTENSION UNIVERSITY
A Correspondence Institution
417 S. Dearborn St. Dept. 983 L Chicago 5, ILL.

Send me your two FREE booklets described above, without obligation.

*Name*_____ *Age*_____

*Street*_____

*City, Zone & State*_____

EVERY PASSENGER TIRE
UNCONDITIONALLY GUARANTEED
plus TIRE INSURANCE FREE

Here's DOUBLE proof that we bear the loss if your passenger tire wears out within the guarantee period or is damaged in any way (except willfully). Don't take risks: we send FREE insurance certificate PLUS written unconditional guarantee with your order.

10% off **ON TWO OR MORE USED TIRES**

LOW COST QUALITY TIRES
Unconditional SIX MONTHS' GUARANTEE plus TIRE INSURANCE FREE

600-16	$3.50 ea.	650-16	$3.75 ea.	550-17	$3.95 ea.
600-15		640-15		475-19	
650-15		550-16		710-15	
550-15		670-16		760-15	

BETTER GRADE PASSENGER TIRES
UNCONDITIONAL ONE YEAR GUARANTEE plus TIRE INSURANCE FREE

600-16	$5.59	700-16	$7.59	700-15	$5.59	550-16	$5.95
600-16 (6)	6.50	600-15	5.59	750-16	12.25	550-17	5.75
650-16	5.79	650-15	5.59	550-15	5.59	475-19	5.75
640-15	5.95	710-15	6.50	820-15	7.50	760-16	7.75
670-15	5.95	760-15	6.75	670-16	6.95		

MUD AND SNOW TIRES
TWO YEAR WRITTEN GUARANTEE

600-16	$6.95	900-16	$12.95	750-20 Reg. $12.50	Spec. $15.95
650-16	7.50	650-16 (6)	9.50	650-15	6.50

EXTRA VALUE TRUCK TIRES
ONE YEAR WRITTEN GUARANTEE

600-20	$10.75	750-20	$14.50	825-20	$21.50	1100-20	$26.95
650-20	11.75	32x6 (8)	11.75	900-20	19.50	1100-22	24.50
700-20	12.50	32x6 (10)	12.50	1000-20	20.00	750-20 (10)	18.00

Complete line of High Mileage Tires in stock. Write for price list for sizes not listed. All prices F.O.B. Richmond.

MAIL ORDERS PROMPTLY FILLED. Send check or money order with this ad.

THE SAFTYRE CO., INC.
"FOR THAT SAFE TIRE"
Dept. PS, 1801 East Broad Street, PO Box 2254, Richmond, Va.

20 POWER
7½ OZ. TELESCOPE

COMBINATION SPECIALS!

$7.95

Precision ground optics are hard-coated to reduce glare, assure maximum brightness. Sturdy metal construction despite light weight. By no means a toy, but an advanced 6 element optical instrument, with a 2 lens, fully achromatic objective, 2 erector lenses, a 2 element Ramsden eyepiece. Pocket size 6¾", extends to 15¼", threaded fittings, chrome-plated inner tubes. A must for vacationing, outdoor sports, hunting, boating, observing races, etc.

20 Power Telescope and 6X Penscope for $10.95

6X PENSCOPE

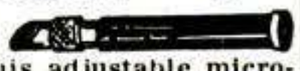
Coated, fits pocket like fountain pen, is always handy. Eyepiece, objective and erecting system in satin-finished neat extension chrome barrel bring objects 6 times closer, magnifying area 36 times! **$3.95**

Both 300X and Pocket Microscopes for $15.95

TRIPLE REVOLVING 100X - 200X - 300X
MICROSCOPE

$14.95 A microscope suitable for students, schools, hobbyists. All metal construction, left and right hand focusing, body tilt adjustment, adjustable plano substage mirror, 3 objectives on turret, instantly making possible desired magnification. Comes complete with one specimen and wooden box. *Your friends will guess you invested 5 times the moderate amount of $14.95!*

20X - 40X - 60X POCKET
MICROSCOPE **$2.95**



Precision-ground optics make this adjustable microscope indispensable for field use. Helps you examine minerals, gems, insects, etchings—in fact you'll be able to find a million uses for this instrument. Select power you want, then turn knurled knob until you obtain pinpoint focus. Sells elsewhere for up to 70% more!

Cash orders postpaid. Include $2 deposit with C.O.D.'s

SPIRATONE, Dept. PS, 49 W. 27th St., N. Y. 1, N. Y.

MASTER COURSE IN
HYPNOTISM

SECRETS REVEALED! Actual methods, techniques of master hypnotists . . . how to hypnotize suitable subjects **QUICKLY**—stage and clinical methods—how to control subjects **AFTER** they awaken—help break tobacco, other habits. Self-hypnosis. Group hypnosis. Entertain with amazing stunts for *fun or profit*. See-how photos, step-by-step instructions tell you how! *Money-back guarantee.* **FULLY PHOTO-ILLUSTRATED . . $2 (complete)** **EXTRA!** Unique "ALARM-CLOCK MIND" instruction folio and **HYPNOTIC CATALOG** included. Order "Hypnotism Course" *today!*

Complete $2

POWER PUBLISHERS, Dept. PS-12, 790 Broad St., Newark, N.J.

Broken or Loose FALSE PLATE?

Make Plates Like New

Fix it Yourself EASILY in a Few Minutes

Your plates may become broken or loose just when you need them most. With FIX-IT-KIT you can repair your own broken plates. Also tightens loose fitting plates, easily. Get permanent comfort with professional material. Complete instructions. Satisfaction guaranteed or your money refunded. *Order Now* at a new low price only **$2.98** postpaid — or sent C.O.D

DENT-FIX DENTAL PRODUCTS, Dept. PS-9,
P.O. Box 674 Kansas City 8, Missouri

Secrets of VENTRILOQUISM *Now Revealed!*

Easy to learn in 60 to 90 days with our Home Study Course. **RESULTS GUARANTEED.** Make Money! Be Popular! Have Fun! Big Opportunity! Radio, Television, Stage Appearances! For Free Information regarding price and terms, WRITE. You must state your age. Dummy Catalog 25c.

FRED MAHER SCHOOL OF VENTRILOQUISM
Box 36, Studio 9 Kensington Station
Detroit 24, Michigan

LEARN AT HOME TO MOUNT BIRDS

Animals, Heads, Fishes, Pets; to TAN.
Be a Taxidermist. Profit and FUN.

Hunters, save your valuable **TROPHIES.** Mount ducks, squirrels, everything. Learn to **TAN** for leather and furs. Wonderful **HOBBY** Have a **HOME MUSEUM.**— **BIG PROFITS** mounting for others. **INVESTIGATE NOW.**

FREE BOOK With 100 fine game pictures. **NOW** absolutely **FREE. Write TODAY.**

Send Postal TODAY for FREE BOOK. State AGE.
N. W. SCHOOL OF TAXIDERMY, Dept. 2609, Omaha, Neb.

Copyrighted material

VOTE TODAY

FOR THE FUTURE YOU WANT!

AMERICAN SCHOOL, Dept. G646, Drexel at 58th, Chicago 37, Ill.

Without obligation, please send FREE and postpaid, full particulars about the subject checked below.

- ☐ Accounting
- ☐ Air Conditioning
- ☐ Architecture & Building
- ☐ Automotive Technician
- ☐ Better Foremanship
- ☐ Bookkeeping
- ☐ Business Management
- ☐ Contracting
- ☐ Diesel Technician
- ☐ Drafting—Building Trades
- ☐ Drafting—Machine Trades
- ☐ Electrical Engineering
- ☐ Electricity—Practical
- ☐ Electronics—Industrial
- ☐ High School Courses
- ☐ Machine Shop Operations
- ☐ Mathematics & Slide Rule
- ☐ Mechanical Engineering
- ☐ Plastics Engineering
- ☐ Plumbing—Practical
- ☐ Private Secretary
- ☐ Refrigeration
- ☐ Retail Merchandising
- ☐ Salesmanship—Outside
- ☐ Sheet Metal Work
- ☐ Tool Making

OCCUPATION .....

AGE .....

NAME .....

HOME ADDRESS .....

STATE .....

CITY .....

THIS IS YOUR BALLOT

Check the career that interests you most, Fill in spaces and mail at once—no obligation

● *Today,* choose the job you want — and prepare for it in spare time at home. Or if you are already engaged in the work you like best, start training *now* for quicker promotion. In hours you might otherwise waste, gain the knowledge and skill that can help you to get ahead faster, make more money, and have greater security.

Thousands before you have followed this plan and were able to step out ahead of others who didn't fit themselves for advancement or who seemed willing to trust to luck.

Training Backed by 55 Years of Experience

For over half a century American School has helped ambitious men and women toward success by providing specialized training for commercial and technical advancement. At a cost you can afford *you* can prepare *at home* to climb in the kind of work you prefer. American School's study program for *you* has been planned by experts with years of experience in the subject you select and they will give you needed guidance every step of the way.

Don't Delay Your Start

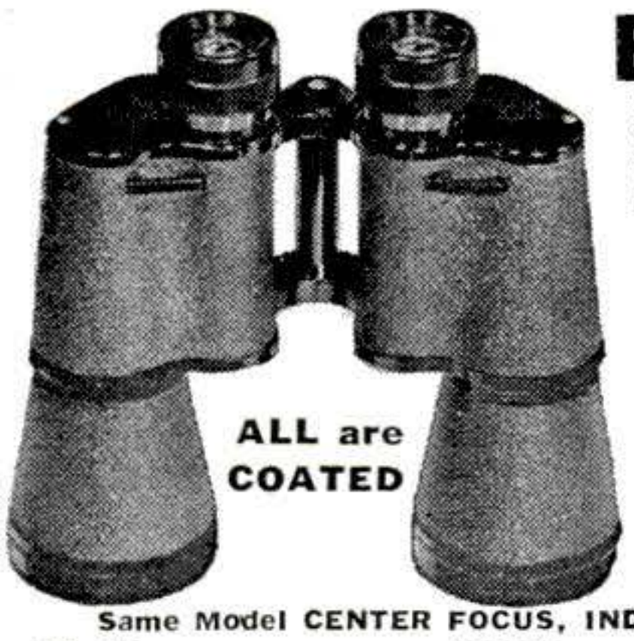
Give serious thought to the list of training courses listed above. Pick the opportunity that interests you, check it and add your name and address. (Check more than one if you are undecided as to which appeals most.) Finally clip out and mail the "ballot" and full information will be supplied, without cost or obligation.

PRACTICAL, EFFECTIVE HOME STUDY TRAINING SINCE 1897

AMERICAN SCHOOL, Dept. G646, Drexel at 58th, Chicago 37, Ill.

THE SOONER YOU START, THE SOONER YOUR GOAL CAN BE REACHED

Copyrighted material



BARGAINS

Brand New, top quality glasses. All have precision ground optics, durable lightweight bodies. Moisture and dust proofed. Achromatic!

Coated! Featherweight!

16x50 COATED $69.50

The ultimate in a fine binocular. Tremendous power. **Featherweight** (weight only 27 ounces!). Precision made in every detail. COATED, providing sharper, brighter images. Individual focus. Objective lens is 50mm (2 inches) across!

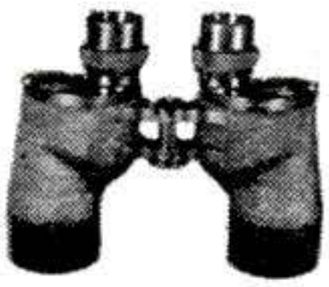
Same Model CENTER FOCUS, IND. FOCUSING RIGHT EYE

10x50 ..... **$49.50**
12x50 ..... **$59.50**

7x50 CLEAR, CRISP

"Day and Night" glass. Has greater light transmission. Field of 375 ft. at 1,000 yds. Water-Dust proofed. Weighs only 31 oz! A tremendous performer. Now Popularly priced. **$36.00**

Same model center focus with ind. focusing right eye $39.50.



BARGAINS! BARGAINS!

6x15 4½ oz. Pocket	$16.95
6x30 16 oz. Economy 4½"x6"	27.95
7x18 Pocket ALL CHROME	19.95
7x35 All around use 5"x6½"	42.95
7x35 Center Focus	46.95
8x30 Center Focus	37.50
8x40 More Power	39.50
8x40 Streamlined 24 oz!	49.50
10 Power Pocket 7½ oz!	24.95
10x30 18½ oz.	39.50
20X Telescope 7½ oz. Pkt. size	8.95

SIX TELESCOPES IN ONE!

15 to 40 POWER

$30.75 COATED

American made Wollensak telescope. Instant focusing at 15x, at 20x, 30 and 40x, etc. Turn power tube to click—no guesswork. Telescope measures 9" closed, 27" when extended. Weighs only 18 oz.! Has rust proof chrome tubes, large 40mm objective lens. All 12 optic surfaces are COATED. See .22 bullet holes clearly at 300 feet. Use also for astronomical observation. $30.75 price **includes** fine leather case. Tax FREE!

UNITED SEAL OF QUALITY

UNITED "Seal of Quality" etched only into UNITED Binoculars. Proof they are BEST-BY-TEST. **Insist** on it!

30 DAY FREE TRIAL

If not fully satisfied return for full refund! Cash orders rushed postpaid. on C.O.D.'s include $2.00 deposit. Add Federal Tax. Prices on all of above include handsome genuine leather case and straps. SAVE by buying direct from UNITED "America's Outstanding Binocular Retailer."

FREE CATALOG

FREE! 36 page—3 color binocular catalog listing over 60 different style binoculars, the Best By Test from 3 continents! UNITED has served over 100,000 Sportsmen. Buy UNITED and SAVE.

UNITED BINOCULAR CO.
United Bldg., 9043 S. Western Ave., Dept. ARF-7316, Chicago 20
Display Sales Rooms open 9:00-5:30 Mon. thru Fri. **DEALERS WANTED**

Only WSA Offers this Simple way to

BE AN ARTIST

TRIAL PLAN makes it easy to start

Prove to Yourself You Can Learn to Draw at Home in Your Spare Time

For 38 years we have trained thousands of satisfied WSA Artists. Why not you? Qualify for a well-paid position in this exciting field. Commercial Art, Designing, Cartooning all in *one* complete home study course. TWO ART OUTFITS included. No experience necessary. Get the facts—trial plan makes it easy—write now.

MAIL COUPON FOR FREE BOOK

WASHINGTON SCHOOL OF ART
Studio 139F, Washington 5, D.C.
Send Free Book, "Art for Pleasure & Profit." No salesmen. (Please print)
Name.....
Street..... Age.....
City..... Zone.... State.....
☐ I am interested in your new Trial Plan

"How to Become a Mail Order Millionaire"

SENT FREE!
RUSH NAME ON POSTCARD TODAY

Read the inside facts about hundreds of "little fellows" who are running Mail Order businesses from their homes—many making $20,000 and more **every year!** Learn how small investments ($16.80 in one case!) have mushroomed into profits of thousands. This incredible reprint from *Mechanix Illustrated* will be sent absolutely **free,** along with details showing how you can quickly master the secrets of getting orders and money in your daily mail, *in a business that's all yours.* Rush name today. A postcard will do.

The L. W. SURVEY 7070 North Clark Street, Dept. 39, Chicago 26, Ill.

Success-Winning VOICE!

Sound Like the He-MAN you are

STRENGTHEN **your** voice this tested **scientific** way. Yes—you may now be able to improve the POWER of your speaking and singing voice . . . in the privacy of your own room! Self-training lessons, mostly silent. No music required.

FREE BOOK Write TODAY for Eugene Feuchtinger's great booklet "How to Develop a Successful Voice." It's absolutely FREE! You must state your age. Booklet mailed postpaid in plain wrapper. No salesman will call. Send your name and age RIGHT NOW!
Prefect Voice Institute, 210 S. Clinton St., Studio JY-1, Chicago 6, Ill.

REAL ESTATE

BE A BROKER

PAYS BIG! SEND FOR FREE, BIG, ILLUSTRATED CATALOG NOW! Graduates report making substantial incomes. Start and run **your own business quickly.** Men, women of all ages, learn easily. Course covers Sales, Property Management, Appraising, Loans, Mortgages, and related subjects. **STUDY AT HOME** or in classrooms in leading cities. Diploma awarded. Write TODAY for free book! No obligation.

FREE BOOK TELLS HOW

WEAVER SCHOOL OF REAL ESTATE (Est. 1936)
Suite 300 Law Bldg. Dept. PS Kansas City, Mo.

GET THIS SUIT AS A BONUS!

Sell popular Smith tailored-to-measure suits. Make up to $10.00-$15.00 daily taking orders from friends. You get paid 3 times—(1) when you take the order and pocket the cash profit,—(2) when we pay you an EXTRA cash bonus,—(3) when you get your own suit as an added bonus, without cost. No experience needed. Send for FREE selling kit and sample line. Write fully, give age, sales exp., etc.

W. D. SMITH & CO., Dept. E
833 W. Jackson Blvd., Chicago 7, Ill.

SAVE UP TO 50% AND MORE

OUT OF PAWN

VALUES FROM $10 TO $10,000

GENUINE DIAMONDS

TIME PAYMENTS ARRANGED

SEND FOR **FREE CATALOG**

All diamonds reset in brand new modern mountings. Sold with a written iron-clad money back guarantee. Over 100,000 satisfied customers have bought diamonds from Berman's.
Our reference—your own bank or any mercantile agency.

Diamonds from estates, banks, unredeemed pledges offered at substantial savings

Berman's Diamond Loan Bank
Dept. PS —BERMAN BLDG., BALTIMORE 1, MD.

Copyrighted material

Make Friends with Marvel!

YOU PULL UP to a gas pump, face glum. Gas again! This bus sure *isn't* delivering miles per gallon. You ask the station attendant what's wrong, thinking. "Here it comes. The big service repair bite . . ." The man surprises you. He takes a can of Marvel from the rack. "Chances are", he says, "there's *nothing* wrong with your car Marvel won't clean up in a jiffy."

This you've got to see! You let him pour a can of Marvel into the crankcase and gas tank. You slip behind the wheel, turn the ignition, step on the gas . . .

ZOOM! New power . . . new pleasure . . . new smoothness . . .

Marvel is a specially developed lubricant for today's high compression engines. It goes to work immediately, sending a strong, tough, heat-resistant film of oil to all moving parts. Eliminates hydraulic valve clatter . . . provides ring seal . . . cleans, cools, and protects bearings and vital upper cylinder areas. Marvel puts "guts" in your engine. You get a faster pick-up . . . more engine hours per dollar . . . many more miles of smoother, more efficient driving.

Try a can of Marvel in *your* engine today. See if your car doesn't run better, longer . . . right from the start.

Install a Marvel Inverse Oiler for direct lubrication to the heart of your engine. Feeds in direct proportion to horsepower curve through inverse ratio to manifold vacuum. No other oiler works on this principle! Fully adjustable. Easy to install. Fully guaranteed.

MARVEL MYSTERY OIL...THE MECHANIC'S CHOICE FOR THIRTY YEARS

EMEROL Mfg. Co., Inc.

Dept. 109, 242 W. 69th Street, New York 23, N.Y.

Copyrighted material

- Windows Go Up and Down
- Windshield wipers move . .
- Gun moves and Bangs,
- Bell clangs . . .
- Taximeter registers . . .

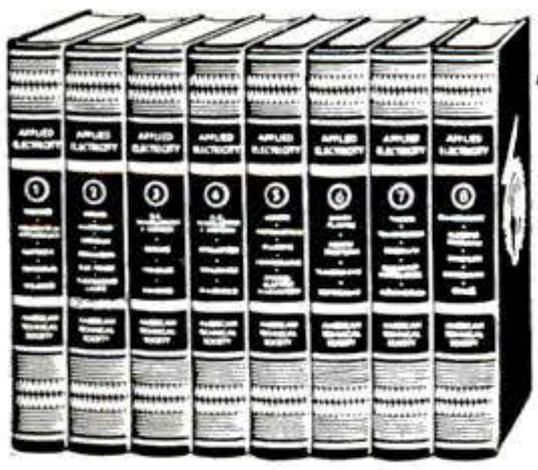
Fascinate the youngsters with hours of fun and action. Imagine—every car WORKS in the line of duty! 1 car with working windshield wiper, 2 cars with windows that open and close, 1 police car with gun that bangs and recoils, 1 ambulance with ringing and swaying bell, 2 taxis with meters that register fare, 1 fire chief car with bell that rings and sways. All 8 cars made of durable steel . . . rubber wheels cannot come out . . . bottoms completely enclosed . . . all new Two-tone and metallic finish . . . all differently colored. SEND NO MONEY. (C.O.D., you pay postage. Remit with order, we pay postage.)

Terrific Value! Only $2.98 COMPLETE

RUSH YOUR ORDER TODAY!

NOVELTY MART Dept. PS-9 59 East 8th Street, New York 3, N. Y.

EXAMINE THESE EIGHT ELECTRICAL BOOKS AT OUR RISK!



3769 PAGES
2784 PICTURES
134 TABLES

MAIL COUPON SEND NO MONEY

LEARN FAST—MAKE MORE $

Here's electrical know-how in eight sturdy volumes — our 19th edition of practical, easy-to-understand information for both beginners and experienced workers. For more than 45 years our editions have helped ambitious men to get better jobs, win promotions, make more money. The set we now offer you covers more than 1000 indexed subjects. By a gradual step-by-step process it takes you into all branches of electricity and supplies "how-to-do-it" knowledge in a clear and thorough manner. The electrical field is tremendous and always expanding. There are golden opportunities for beginners who want to climb to the top—bigger-pay opportunities for those now in the field who want to progress faster. These great books can give *you* the boost *you* need. SEND THE COUPON NOW. If you keep the books we'll include a year's consulting privileges with our engineers, no extra cost!

AMERICAN TECHNICAL SOCIETY—Publishers Since 1898
Dept. E620, Drexel Ave., at 58th St., Chicago 37, Ill.

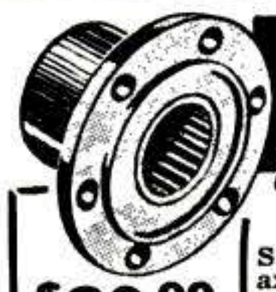
I would like to examine your 8-Volume Set of Electrical Books, I will pay the delivery charges only, but if I choose I may return them express collect. If after 10 days' use I prefer to keep them, I will send you $3 and pay the balance at the rate of only $4 a month until $34.80 has been paid. Include consulting service as offered above.

Name.....

Address.....

City.....State.....

Please attach letter giving employer's name and address (if self-employed give business man reference). Men in service please give home address.



WARN HUB CAP MAKES 2 JEEPS OUT OF 1

Ends front wheel drag on 4-wheel drive Willys Station Wagons, Pick-ups and Jeeps

Saves gas up to 5 miles per gallon, tire wear, front axles, increases speed and power. Stops shimmy—front wheels coast out of gear! 4-wheel drive handles, performs, climbs like 2-wheel. Install or remove WARN HUB CAPS in 10 minutes. Polished aluminum, guaranteed. Rush check, M.O., or C.O.D. Write for circular.

$20.00 Prepaid U. S., Canada

WARN MFG. CO. P. O. Box 6064-B Seattle 88, Wash.

WOOD CARVING and WHITTLING
AN ARTISTIC HOBBY FOR ALL

This new manual shows you how to do every kind of wood carving. How to carve jewel boxes, picture frames, trays, chests, furniture, etc. How to do chip carving, level surface carving, incising, carving in relief. Carving human and animal figures in the round completely explained and simplified. 256 Pages. Fully illustrated,—full cloth bound. Send only $2.00 and your copy will be sent postpaid, or order COD plus postage if you wish. *Money back if not satisfied.*

Popular Science Monthly—Dept. 952, 353-4th Ave., New York 10, N. Y.

Illustrated

BOOKLETS

HERE THEY ARE, illustrated comic booklets just off the press. Good clear illustrations. Send $1 for 12 booklets and receive FREE two of the larger size 32 page books. Rush a buck for all 14 books to,

AL'S PRINT SHOP
216-D W. JACKSON BLVD. CHICAGO, ILL.

Copyrighted material

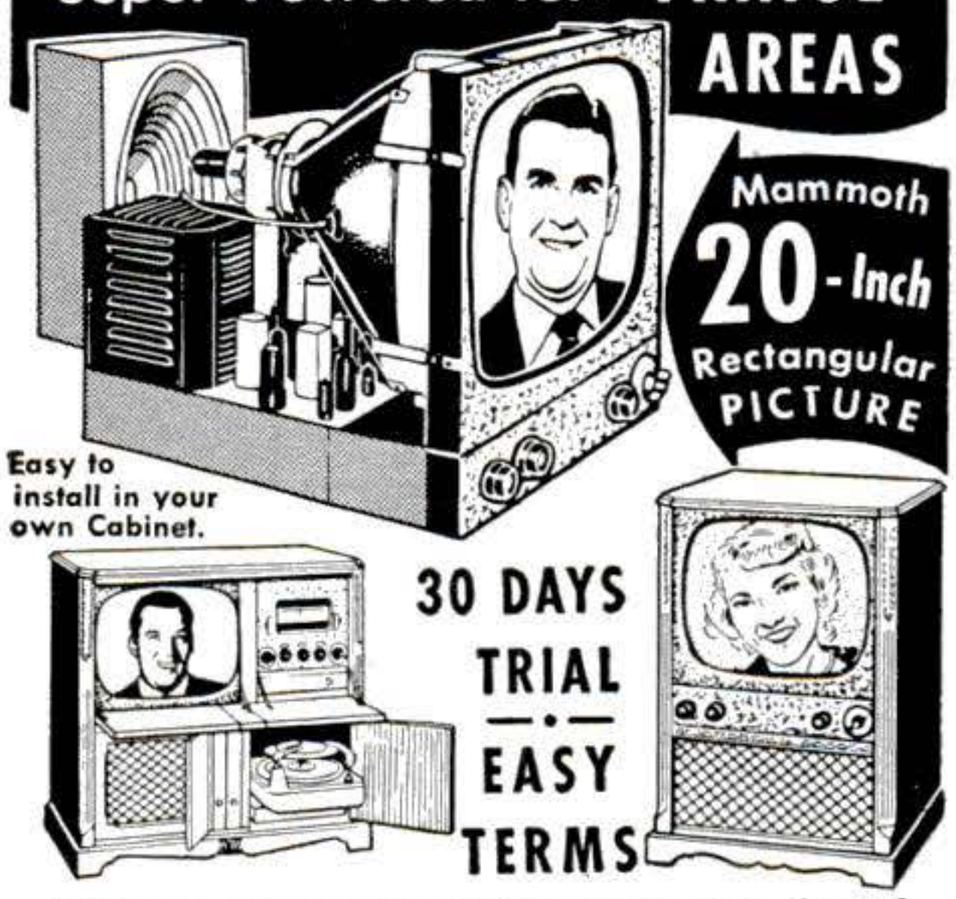
Copyrighted material

NEW LOW PRICES

on these powerful NEW 1953

MIDWEST TELEVISION

Super Powered for "FRINGE" AREAS



Midwest offers a sensational new 1953 line of beautiful consoles and complete chassis for easy installation in your own cabinet. Mammoth 20-Inch Television at low Factory Prices, and on 30 Days Trial.

Buy DIRECT from the MIDWEST Factory and SAVE!

SEND THIS COUPON For FREE MIDWEST 1953 Catalog

MIDWEST RADIO & TELEVISION CORP.
Dept. 24A, 909 Broadway, Cincinnati 2, Ohio

NAME _____

ADDRESS _____

CITY _____ ZONE ____ STATE _____

UNLIMITED OPPORTUNITIES IN ENGINEERING

DEGREE IN 27 MONTHS

Study Engineering in this world-famed school, established 1884. Demand for our graduates exceeds supply. Growing shortage of engineers. No field offers greater opportunities for responsible, lucrative positions.

Bachelor of Science Degree in Mechanical, Civil, Electrical, Chemical, Aeronautical, Radio (Television) Engineering; Business Administration and Accounting. Also 36-weeks certificate courses in Surveying and Drafting.

Personalized Instruction. Accelerated courses. Non-essentials eliminated. For ambitious, earnest students. Earn your degree in the shortest possible time. Preparatory courses. Placement service.

Extensive Campus. Well equipped, new and modernized buildings; up-to-date labs. Low cost. New terms start quarterly. Enter September, January, March, June.

Mail Coupon Today

TRI-STATE COLLEGE

592 College Avenue, Angola, Indiana

Please send me free catalog and special information. I am particularly interested in courses as checked:

☐ Mechanical ☐ Civil ☐ Electrical ☐ Chemical ☐ Aeronautical
☐ Radio (Television) ☐ Business Administration ☐ Accounting
☐ Short Diploma Courses

NAME .....

ADDRESS .....

TUBE GIVEN WITH EVERY TIRE AT NO EXTRA COST

Why Pay More!

FALL SPECIALS—AT LOW PRICES
SAVE TIME—SAVE MONEY—SEND THIS AD

GOOD USED TIRES—NOT RECAPS
19 YEARS AT THIS ADDRESS
BE WISE—A TRIAL OF ONE
TIRE WILL CONVINCE YOU.
19 MONTHS WRITTEN GUARANTEE

600-16	$4.05	820-15	$5.35	600-20	$7.05	32x6(8)	$8.55
650-16	4.05	700-15	4.35	650-20	7.65	32x6(10)	9.85
700-16	5.05	670-15	4.55	700-20	8.45	900-20	13.25
650-15	4.05	710-15	4.75	750-20	8.55	1000-20	13.85
760-15	5.05	550-17	5.55	825-20	14.85	1100-20	14.85

EXTRA SPECIALS—29 MONTH WRITTEN GUARANTEE

600-16	$4.75	550-15	$4.95	700-15(6)	$9.85	700-20	$11.05
600-16(6)	5.75	640-15	4.95	750-16(8)	9.75	750-20	12.75
650-16	5.75	670-15	5.15	700-17	10.95	750-20(10)	16.15
650-16(6)	6.45	710-15	6.65	750-17	11.65	825-20	18.35
700-16	6.45	760-15	5.85	750-15	14.05	900-20	17.35
750-16	6.95	800-15	6.55	825-15	16.05	1000-20	17.85
525-18	5.95	820-15	6.55	600-20	8.85	1100-20	20.55
550-17	4.95	670-16	6.65	650-20	10.25	1200-20	23.75
650-15	5.05	760-16	6.55	32x6(8)	10.65	1000-22	20.55
700-15	4.75			32x6(10)	10.95	1100-22	20.55
Whitewalls $1.00 Extra				Military treads		750x20(8)	14.05

Thousands of tires shipped all over U. S. A. All tires shipped F.O.B. Phila. Send Check or M.O. with this ad. Dept. 5.

STANDARD, 834 N. Broad St., Philadelphia 30, Pa.

LEATHERCRAFT and many other crafts

SHELLCRAFT • easy to do

TEXTILE PAINTING • profitable too

Send for FREE BIG CATALOG TODAY

• complete supplies

• everything you need

KIT KRAFT • 7373 Melrose Ave., Dept. 39, Hollywood 46, Calif.

THE ART OF DRAWING

Fascinating learn-by-doing lessons in drawing, painting, illustrating and commercial art. Prepared for YOUR instruction and enjoyment in spare time at home. Purpose: To turn amateur talent into PROFESSIONAL skill. Cost? Surprisingly low. Send for FREE illustrated booklet, "Building a Future" in Art. Write today.

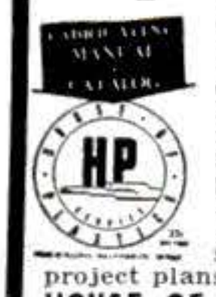
GRANT SCHOOL OF ART Dept. B92, 225 N. Michigan Avenue, Chicago 1, Illinois

SHORTHAND IN 6 WEEKS AT HOME

Famous Speedwriting Shorthand. 120 words per minute. No symbols; no machines. Uses ABC's. Easiest to learn, write and transcribe. Low cost. 150,000 taught by mail. Also typing. 29th year. Write for FREE booklet to:

Speedwriting® Dept. 2609-2
55 W. 42 St., N. Y. 36

"PLASTICS FABRICATING MANUAL"



New book shows you how to work in Plastics for fun and profit! Jam packed with "How to do it" illustrations. Learn latest methods of carving, sawing, cementing, polishing, casting, drilling every type of plastic including Lucite, Acetate Plexiglas, Catalin, Bakelite, etc. A real gold mine for advanced workers or beginners. Shows how to make hundreds of useful and decorative items from plastic sheets, rods, tubes and casting resins. Manual also contains complete illustrated catalog of our line of plastic hobby supplies including plastic stock sheets—rods—tubes—casting resins—cements—dyes—tools and project plans. Send 25c for this valuable manual. Edition limited—act fast!

ONLY 25¢

HOUSE OF PLASTICS, 8648 Linwood, Dept. PS-1, Detroit 6, Mich.

GET INTO BUSINESS for Yourself!

METALIZING BABY SHOES
AT HOME IN SPARE TIME

Make your home your headquarters. Start now, full or part time. Famous *Warner Success Plan* backed by old established company tells everything —Facts cost nothing, now or ever. Time is precious. Big money waiting for serious minded men, women.

SEND NAME ON A PENNY POSTCARD!

I want you to read Complete WARNER Success Plan *entirely at my risk*. Read the facts—then decide. Rush name today. *Write to Ray E. Brandell.*

WARNER ELECTRIC CO., 1512 Jarvis Ave. DEPT. M-2-P, Chicago 26, Illinois

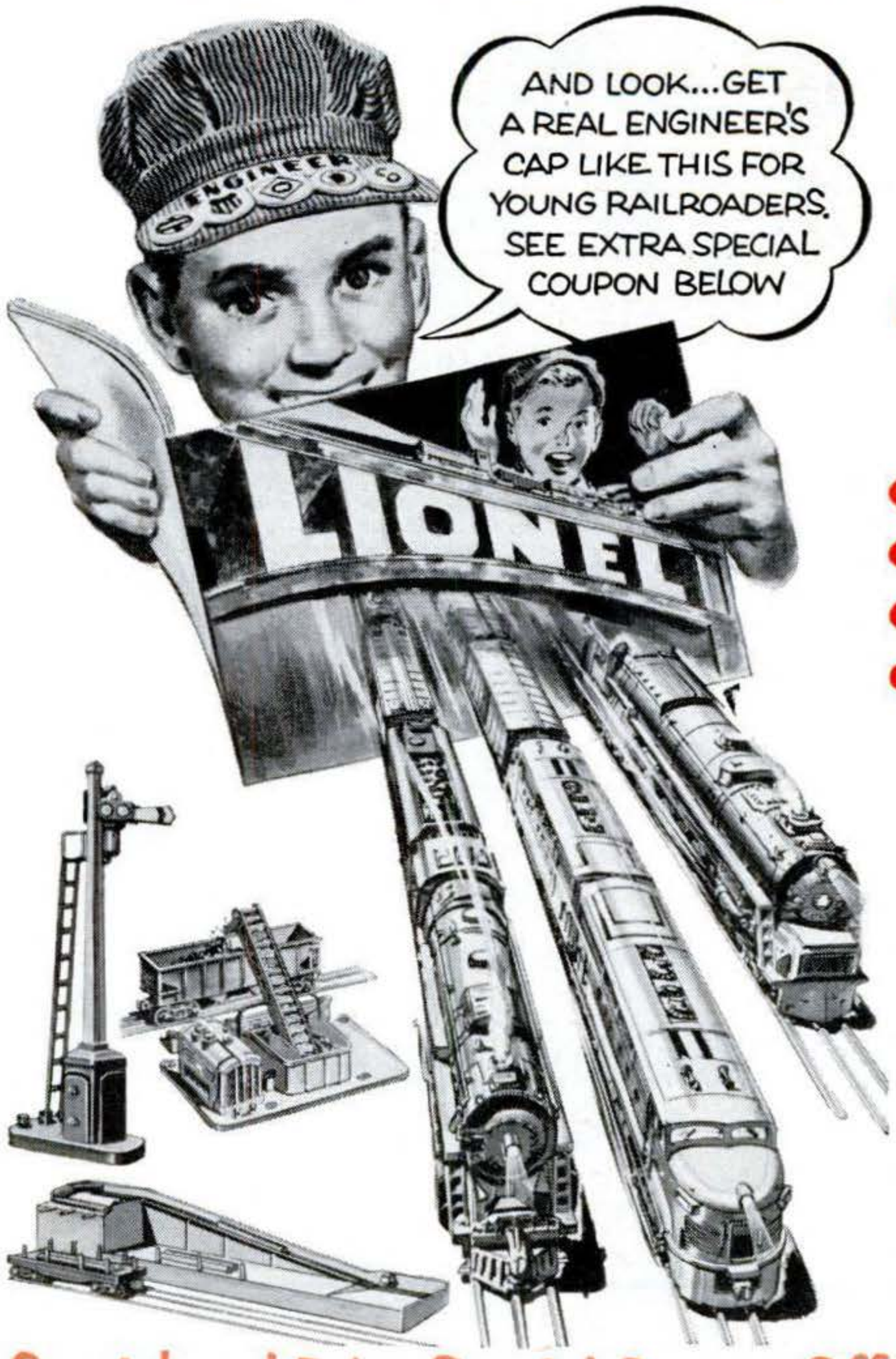
FREE! Offer of COMPLETE MONEY MAKING PLAN Send No Money

Copyrighted material

LOOK WHAT'S NEW FOR '52!

in World Famous

LIONEL TRAINS



- **Brand-New Diesels!**
- **New Train Sets!**
- **New Accessories!**
- **Plus** the Realism...Advanced Engineering...exclusive features that only Lionel brings you!

Model railroaders everywhere know that only Lionel Trains look and sound *and perform* like the real thing—the only trains with real R.R. Knuckle Couplers, Die-cast Trucks, Solid Steel Wheels and built-in Two-Tone Whistle. The most realistic of smoke-puffing steam loco's, the most authentic Diesels. See them at your Lionel Dealer's...*now!*

Special and Extra Special Coupon Offers

.....GET YOURS IN NOW!

Special offer below. Extra-Special in box at right. Enclose correct amount and be sure to write your name and address clearly.

LIONEL TRAINS, P.O. Box 9, Dept. T, New York 46, N.Y.

TWO OFFERS CHECK ONE

☐ I enclose 25¢ for catalog offer below—

1. The new 36-page full color Lionel catalog.
2. Rule Book (including signals) for Model Railroaders.
3. Model R.R. Town Building Kit—Stores, etc.

OR

☐ I enclose 50¢ for catalog offer above plus engineer's cap

Name _____

Address _____

City _____ Zone _____ State _____

EXTRA-SPECIAL COUPON OFFER!

ALL For 50¢

Official Engineer's Cap, in striped denim, plus 5 R.R. insignia emblems to wear on it, *together* with Catalog, Rule Book and Building Kit, all for only 50¢.

✓ *Check Cap Size here*

SMALL | MEDIUM | LARGE

Copyrighted material

ONE BUSINESS THAT IS NOT EFFECTED by STRIKES, DEPRESSIONS OR POLITICS

OWN BUSINESS

WITH A POTENTIAL MARKET OF 50,000,000 CUSTOMERS

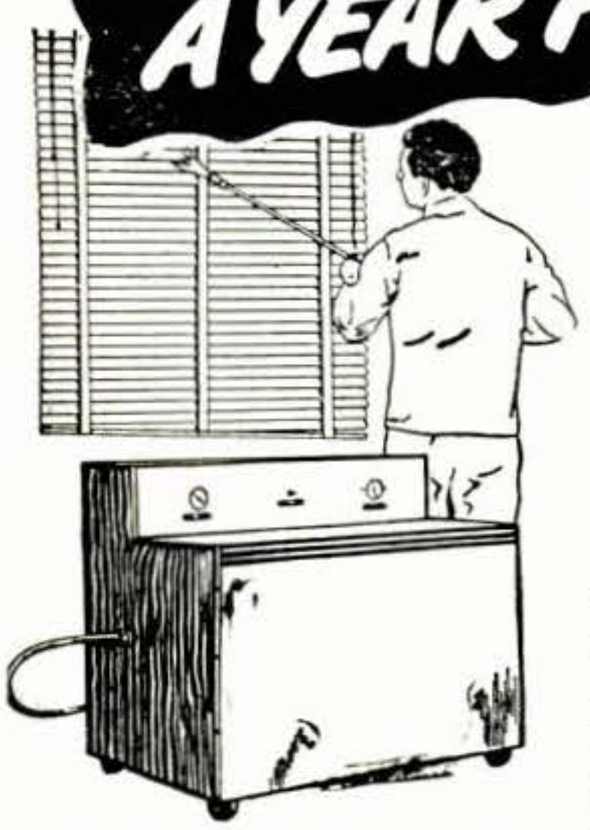
New shop-method, home training system gives you electrical know-how that used to take years to learn. Learn at home by building valuable testing kits, repairing your own and neighbors appliances. It is not unusual for appliance repairmen to charge on the basis of $5.00-$6.00 an hour.

FREE ILLUSTRATED BOOK

Shows you how you learn every phase of electrical appliance. How to make money while you learn. Write today for your FREE copy.

CHRISTY TRADES SCHOOL
Dept. D-1901
4432 North Kedzie Ave., Chicago 25

BUILD A $15,000 A YEAR FUTURE!



IN THE EXCITING NEW BUSINESS OF

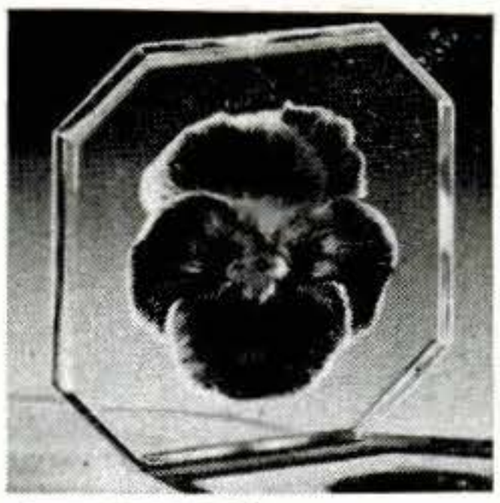
LAUNDERING VENETIAN BLINDS

There is big money to be made cleaning Venetian Blinds and a permanent, fast growing, Lifetime Business, besides.

An amazing new kind of business of your own in a field that is growing like mad. Millions of Venetian Blinds need laundering at regular intervals. With our new patented machine, you can start small—using your basement, garage or utility room to begin with. You can expand as your business increases by leaps and bounds. Income up to $200.00 daily already being made by others. Small investment for equipment starts your own lifetime business—and monthly payment plan permits you to pay for it as you grow.

FREE Get all the facts about this sensational new kind of machine that launders blinds so fast that your charges are unbelievably low. People would rather send blinds to you than do the work themselves. Yet, you make 700% profit on every blind you clean. Get names of successful owners near you. Get details of the full amazing plan without obligation. Be first in your territory to start a business that has brought $15,000 PROFITS the first year to others. Wire today or send name on postcard.

VENETIAN BLIND LAUNDRY EQUIPMENT CO. INC.
442 N. SENECA ST. DEPT. 129 WICHITA 12, KANSAS



REAL PANSY COASTERS

Make Them at Home

EASY — FUN PROFITABLE

Now create new and truly different gift articles like the beautiful pansy coaster shown—made by embedding **real** pansies in Castolite—the "magic" liquid casting plastic. With our simple step-by-step method you can make hundreds of valuable articles, including smart costume jewelry, chic Hi-Style buttons, colorful key tags, tie-clasps, cuff links, plaques, tiles, many other things. Send **25c** for Big Castolite Creations Manual. FREE with Manual, inspiring New Home-Success Plan. Write:

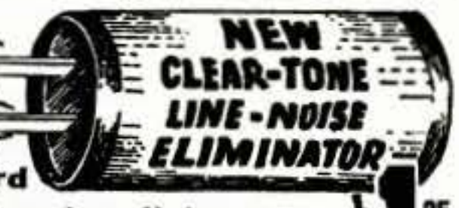
CASTOLITE CO., Dept. K-2, Woodstock, Ill.

WIN *with* MAGIC CARDS

This special deck of playing cards with secret code on back of each card tells YOU what each card is when lying face down. Easy directions explain code and how to do many kinds of "Magic" tricks. Use same deck for usual card games, such as poker, bridge, etc. Only $2.98. Get a deck today. SEND NO MONEY. Send Name and Address. Pay postman on arrival only $2.98 plus postage. Address

HOLLISTER-WHITE CO., Dept. 450-M
3016 W. Van Buren St. Chicago 12, Illinois

Reduce RADIO NOISES



SIMPLY PLUG Radio or Appliance cord into Noise Eliminator and plug into wall socket. Enjoy reception FREE from many distracting noises. Send No Money, pay postman **$1.25** each (**2 for $2.00**) plus postage or send cash and we'll mail postpaid. Try 5 days, money back if not delighted. Many hundreds of satisfied users. Send for yours today.

$1.25 EA 2 for $2.00

MERIT SALES, DEPT. J-27
4225 Eldone Dr. Baltimore 29, Md.

STUDY TO BE A DOCTOR

of Psychology or Metaphysics

Obtain a Ps.D., Ms.D., or Ph.D. degree. Be a Teacher, Lecturer or Accredited Practitioner. Teach others how to achieve Health, Happiness and Contentment. Chartered by State. Write for FREE book telling how.

THE NEOTARIAN COLLEGE OF PHILOSOPHY
Desk 5, Pickwick Building Kansas City 6, Missouri

Free Book on Arthritis And Rheumatism

HOW TO AVOID CRIPPLING DEFORMITIES

Explains why drugs and medicines give only temporary relief and fail to remove the causes; tells all about a specialized non-surgical, non-medical treatment which has proven successful for the past 33 years. Write for this 44-page FREE BOOK today.

Ball Clinic Dept. 36 Excelsior Springs, Mo.

AMAZING NEW INVENTION KILLS ALL TYPES OF INSECTS

Keeps rooms of more than 10,000 cubic feet free from annoying insect pests. Tiny as a light bulb, just plug it in any 110 volt AC or DC outlet. Scientifically, automatically, kills all insects.

SILENT • ODORLESS • QUICK
GUARANTEED FOR 10 YEARS

New Mortane is non-injurious to humans, pets, plants. Finished quality appliance. Carries iron-clad, must-work 10 year guarantee. Free: Over 240 hours supply Mortane crystals included. Refills guaranteed always available. Over 240 hours supply 50c—over 1000 hour supply $1.95. Send $6.95 check, M.O., or sent C.O.D. Satisfaction absolutely guaranteed.

VOLUME SALES OUTLET 1209-S Oregon Ave., Phila. 48, Pa.

Copyrighted material

CAR OWNERS SHOVE $10 BILLS IN YOUR POCKET..

When you show them America's greatest auto seat cover values!

Including

BAMBOO

Newest Seat Cover Sensation!

FIESTA

BULLFIGHTER

BLACK EBONY

BIG MONEY, FULL OR SPARE TIME!

Want extra money—plenty of it day after day? Then rush your name and address at once for Free Sample Outfit that will start you taking orders from car owners everywhere for Key expertly tailored Auto Seat Covers. EXCLUSIVE NEW PATTERNS to fit every make and model car. No one can compete with you in wide choice, in quality—and in expert tailoring that makes covers fit like a pair of gloves. And when you quote prices that are only a fraction of what the customer expects to pay, brother! You make money hand over fist writing up the fast orders! Line includes nationally advertised sensations like BLACK EBONY Saran, in the new Black and Silver Watermelon Stripe, beautiful beyond description BAMBOO, luxurious, brilliant FIESTA, colorful BULL FIGHTER PLAIDS, plus many other exclusive patterns to choose from, all at unbelievably low prices. It's no trick at all to make *big* money whether you sell full time or just in spare time. OPPORTUNITY TO SELL AT WHOLESALE TO GARAGES, SERVICE STATIONS, ETC.

RUSH NAME FOR FREE OUTFIT

GIVE MAKE, YEAR AND MODEL OF YOUR CAR. No experience needed. Make all the extra money you need easily just by showing! Every car owner a "hot" prospect. YEAR AROUND STEADY PROFITS. No investment to make. Actual seat covers given to producers for OWN use! Write for Free Selling Kit and actual samples TODAY!

KEY PRODUCTS CORP., Dept. 69
800 NORTH CLARK STREET CHICAGO 10, ILLINOIS

KEY PRODUCTS CORP.,
Dept. 69
800 N. Clark St., Chicago 10, Ill.
Rush Free Sample Outfit at once. (If you own a car include the following information):

Make. . . . Year. . . Model. . . . .

Name_____

Address_____

City_____ State_____

Copyrighted material

New Amazing Invention—"Magic Art Reproducer"

DRAW THE FIRST DAY!

NO LESSONS! NO TALENTS!

You Can Draw Your Family, Friends, Anything From REAL LIFE—Like An Artist Even if You CAN'T DRAW A Straight Line!

Anyone Can Draw With This Amazing New Invention—instantly!

Complete for only **$1.98**

Also Excellent for Every Other Type of Drawing!
• Human Figures • Outdoor Scenes, landscapes, buildings • Still life, vases, bowls of fruit, lamps, furniture, all objects • Copy photos, other pictures, portraits, etc. • Copy blueprints, designs, decorations, etc., for woodwork, machine, for needlework, crocheting, knitting • Copy all cartoons.

FREE! "Simple Secrets of Art Tricks of the Trade"
This valuable illustrated guide is yours FREE with order of "Magic Art Reproducer." Easy ABC art tricks that anyone can follow on different techniques, effects, proportions, perspectives, shading, color, animated cartoons, human figures to use with "Magic Art Reproducer" for added touches to your drawings.

SEND NO MONEY! Free 10-Day Trial!
Just send name and address. Pay postman on delivery $1.98 plus postage. Or send only $1.98 with order and we pay postage. You must be convinced that you can draw anything like an artist, or return merchandise after 10-day trial and your money will be refunded.

Yes, anyone from 5 to 80 can draw or sketch or paint anything now . . . the very first time you use the "Magic Art Reproducer" like a professional artist—no matter how "hopeless" you think you are! Anything you want to draw is automatically seen on any sheet of paper instantly! Then easily and quickly follow the lines of the "picture image" with your pencil . . . and you have an accurate original drawing that anyone would think an artist had done. Also makes drawing larger or smaller as you wish. Anyone can use it on any desk, table, board, etc. —indoors or outdoors! No other lessons or practice or talent needed!
Have fun! Be popular! Everyone will ask you to draw them. You'll be in demand! After a short time, you may find you can draw well without the "Magic Art Reproducer" because you have developed a "knack" and feeling artists have—which may lead to a good paying art career.

Norton Products Dept. 4409, 296 Broadway New York 7, N. Y.

FIRST AID FOR TV SET OWNERS!

H. G. CISIN's "TV DOCTOR"
Shows you how to fix your own set rapidly and SAFELY!

(TM)

YOURS TO TRY 5-DAYS FREE!
Save money, throw away service contracts! Here's a real "fix-it-yourself" book—an amazing, quick, copyrighted method of locating & fixing TV troubles. Written by a noted inventor & educator, H. G. Cisin, in language you can understand.

TUBES CAUSE 80% OF TV TROUBLES!
"TV DOCTOR" shows you how to quickly locate and change all defective tubes with **COMPLETE SAFETY.**

WITHOUT EXPERIENCE!—PICTURES & TEXT MAKE FIXING IT YOURSELF EASY
Reveals many closely guarded TRADE SECRETS. Lists over 123 trouble conditions. Method applies to **all** TV sets, even newest RCA's, Philco's or any 2,000 models, old and new. Copyrighted TROUBLE SHOOTING GUIDE pin-points hundreds of troubles. **No instruments needed!**
11 money-saving, fact crammed, detailed, illustrated chapters include: practical ways to combat interference & ghosts, how to appraise & buy a TV set, valuable information on antennas, lead-ins, color, explains TV terms, lists names & addresses of TV mfgs.—a veritable encyclopedia.

Continual Entertainment—No Service Charges
Only $1.—you'll say it's worth hundreds.

$1

FREE OFFER: Get the new full size profusely illustrated $1 book **"TV Trouble Picture Guide including TV Dictionary"** as a FREE GIFT, by ordering the TV Doctor ($1) and H. G. Cisin's famous **"TV Trouble Shooting Method"** ($1) which trains you to be a TV diagnostician and TV service man. Think of it—all 3 TV books postpaid for only $2 . . . you save $1.

RUSH COUPON with your name & address. Enclose $1; 5-days to read without risk or return for refund.

H. G. CISIN, Consulting Engineer, (Dept. PS-8), 200 Clinton St., Brooklyn 2, N. Y.

☐ Enclosed find $2, full payment for **"TV DOCTOR," "TV TROUBLE SHOOTING METHOD." & "TV PICTURE GUIDE".** Rush copies **postpaid.**
☐ Enclosed find $1. in full payment for **"TV DOCTOR,"** rush copy **postpaid.**

Name .....
Address .....
City ..... Zone ... State .....

ORDER NOW POSTPAID

GO PLACES

LEARN ANOTHER

LANGUAGE

EASILY — QUICKLY

by LINGUAPHONE IN 20 MINUTES A DAY

***World's-Standard* CONVERSATIONAL METHOD**

FRENCH SPANISH GERMAN RUSSIAN JAPANESE —any of 29 Languages

Are interesting job, travel, armed services', cultural opportunities passing you by because you speak only one tongue? Learn **AT HOME** the same natural, easy way you learned English long before you went to school. **YOU LISTEN**—you hear native men and women speak—you understand—**YOU SPEAK.** World-wide educational endorsement; over a million home-study students. **FREE BOOK** gives fascinating facts. **WRITE TODAY!** Approved for **VETERANS'** Training.

LINGUAPHONE INSTITUTE
147-09 Radio City **New York 20, N. Y.**

WATCHMAKER'S SCREW DRIVERS

8 Jeweler's Screw Drivers. A must for every hobbyist and model builder.

SET OF 8

Ideal for precision work, camera and fine instrument repairs. In 8 sizes—from the smallest size 9 up to size 2. Finest tempered steel blades. Lowest price!

MONEY BACK GUARANTEE IF NOT SATISFIED

ONLY **$2.00** C.O.D. $2 plus postage, or send $2 and we pay postage.

PINE WATCH CO. Dept. 40 50 ELDRIDGE STREET N. Y. 2, N. Y.

ILLUSTRATED COMIC BOOKLETS

Sell our ILLUSTRATED COMIC BOOKLETS and other NOVELTIES. Each booklet size 4½ x 2¾ and is fully illustrated. We will send 24 assorted booklets prepaid upon receipt of $1.00 or 60 assorted booklets sent prepaid upon receipt of $2.00. Wholesale novelty price list sent with order only. No orders sent C.O.D. Send Cash or Money-order.

REPSAC SALES CO., Dept. 26-K
1 Orchard St. **New York 2, N. Y.**

AVOID SEPTIC TANK TROUBLES

d-CON Rid-X

Prevent Clogging, Back-ups, Offensive Odors in **Septic Tanks, Cesspools, Outdoor Toilets.** One Treatment lasts months. Guaranteed. $1.69 at Hardware and Drug Stores.
d-CON Co., Inc., Chicago 11, Ill.

TREASURE -- $10,000

New locator detects metals, valuable minerals and buried treasure. Money-back guarantee of superiority.

Also geiger counters. Govt. reward of $10,000 for uranium discovery. Write for FREE information.

THE GOLDAK COMPANY
1544 W. GLENOAKS BLVD., GLENDALE 1, CALIF.

BUILD YOUR OWN HOME *for Only $690.00**

1 & 2 BEDROOM DESIGNS

***Now YOU can own a home at a price you can afford . . .* Sturdy, fireproof, termite proof, concrete block & wood construction. Ideal for average family. Has lvg. rm., kitchen, bath and 1 or 2 bedrooms. Complete plans and step-by-step instructions tell you how — where to build.**

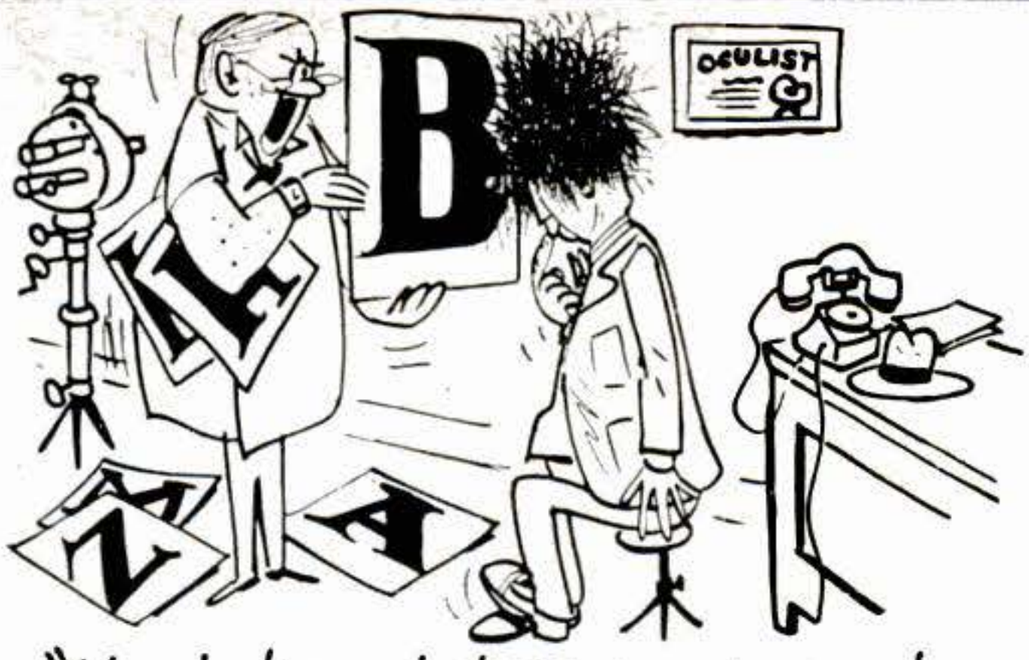
• **Complete designs, easy working plans, material lists, and illustrated step-by-step instructions to build *ALL Sunny-Cal Homes*** *Only $1.00 PPD.*

*1 Bedroom Design

MONEY BACK GUARANTEE

SUNNY-CAL *Homes* **1621 N. Cahuenga Blvd., Dept. 2 Hollywood 28, California**

Copyrighted material



"You don't need glasses...you need Wildroot Cream-Oil hair tonic!"

"Says he's got to save the Wildroot Cream-Oil because it's his hair's best friend!"

"If he's ashamed of having dandruff why doesn't he use Wildroot Cream-Oil hair tonic!"

YOUR HAIR'S BEST FRIEND

America's Favorite Hair Tonic!

REAMER KELLER

*We guarantee this will amaze you**

UP TO 50 FEET OR MORE

LEVELALL

Packed in husky wooden carrying case 12 x 11¾ x 3¼". Only 6 pounds, easily carried.

PERFECTLY ACCURATE LEVEL

With One-Man Operation

FASTER THAN $100 ENGINEER INSTRUMENTS!

$7.45

Who can PROFIT with a LEVELALL:

Contractors, builders, engineers, carpenters, masons, plumbers, road builders, landscape gardeners, farmers, home owners.

SIMPLE... any ONE man can work it. • GOOD INVESTMENT... saves expense of a surveyor and his assistant. • ACCURATE, FOOL-PROOF... based on a simple fundamental of physics. • FAST... finds level points as quick as you make a pencil mark. Requires no sighting, no signaling. • WORKS AROUND CORNERS! Does not require seeing distant measuring point. • IS WEATHER-HARDY. Can be used in rainy or snowy weather. • STURDILY built. Nothing to get out of adjustment. Always a correct level.

A FEW OF LEVELALL'S MANY USES: For footings, foundation forms, batter boards, sills, lintels, floors, ceilings, road gradings, driveways, lawns, walks, piping, drainage, farm contouring, all general construction normally needing an expensive leveling instrument.

WHAT LEVELALL GIVES YOU: Complete instructions on all uses and types of work. A sturdy leveling instrument consisting of 50 feet of superior quality vinyl polychloride tubing, filled with red Level-Flo liquid. Two Levelall mounting brackets of cadmium-plated steel with universal tube attachment. Sturdy wooden carrying case.

*** UNCONDITIONAL MONEY-BACK GUARANTEE**

LEVELALL

81 WEBSTER ST., ROCKLAND, MASS.

Mail me ..... Levelall instruments at $7.45 each. It is understood that whether I order C.O.D. or enclose remittance, you guarantee satisfaction or money back upon return of Levelall within ten days.

NAME .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

☐ Send C.O.D. I will pay postman full purchase price plus delivery charge on arrival.

☐ Full purchase price is enclosed. Send postpaid.

Copyrighted material

Learn this Profitable Profession

IN 90 DAYS AT HOME

Money-Making Career Open to Men and Women, 18 to 60

Hundreds of men and women between 18 and 60 make $10 to $20 in a single day giving scientific Swedish Massage and Hydro-Therapy treatments. There is big demand from doctors, hospitals, sanatoriums and clubs. Graduates earn large full time incomes from these or in private practice in their own offices. Others make good money from home treatments given in spare time. Learn this interesting, money-making profession in your own home, through our home study course. Same instructors as in our **nationally known** resident school. **You** can win independence and prepare for future security by qualifying for your Graduation Certificate. Course can be completed in 3 to 4 months. Many earn while they learn. Begin **your** training at once.

NEW 32-PAGE BOOKLET *FREE*

Fill in the coupon below (please print name and address) and mail it for your FREE copy of 32-page Information Booklet. If you act at once we will include Anatomy Charts and Success Booklet which supply additional information you should have. All will be sent postage paid.

THE COLLEGE OF SWEDISH MASSAGE
Dept. 270L, 41 E. Pearson St., Chicago 11, Illinois

Please send me FREE and postpaid New 32-Page Illustrated Booklet, Anatomy Charts and Success Booklet at once.

Name.....Age.....

Address.....

City.....State.....

Northrop Students BUILD MINIATURE —PULSE JETS→

Train Now at NORTHROP for an Exciting AVIATION CAREER

Men training *today* at Northrop Aeronautical Institute as Aeronautical Engineers or Aircraft & Engine Mechanics, will design, build, and maintain the jet and rocket aircraft of tomorrow! You can begin *NOW* to prepare yourself for this *exciting, profitable future!*

Train at NORTHROP! At Northrop Aeronautical Institute, *a division of the famed Northrop Aircraft Inc.*, you study in an atmosphere of aeronautical achievement! You put your mechanical skills to work helping design, layout, draw, mock-up, fabricate, test and assemble *experimental aircraft!*

Extra Advantages for You! It's the *trained* man who gets the best jobs—advances the fastest in important work, either civilian or military. For example, Northrop Engineering graduates are educationally qualified for Naval Aviation Cadet, Air Force Cadet, or Officer Candidate training.

FREE Northrop Catalog. Send today for the big 34-page Northrop catalog that describes the career opportunities in aviation, outlines the courses offered, and shows pictures of the training facilities you will use.

APPROVED FOR VETERANS

Northrop Aeronautical Institute

1525 E. Broadway, Hawthorne, Los Angeles County, Calif.

SEND FOR FREE ILLUSTRATED CATALOG

NORTHROP AERONAUTICAL INSTITUTE
1525 E. Broadway, Hawthorne, Los Angeles County, Calif.

Please send me immediately the Northrop catalog, special military information and employment data, and schedule of starting dates of classes. I am interested in:

☐ Aeronautical Engineering ★ Aircraft & Engine Mechanics ☐

Name_____Age_____

Address_____

City_____Zone____State_____

☐ VETERANS—Check here if you are entitled to training benefits under the G. I. Bill.

BN7-A

ARREST HIM, OFFICER!

I'LL HAVE COMPLETE FACTS ON THE OTHER FELLOW TONIGHT!

Operator No. 38 is on the job . . . FOLLOW HIM through all the excitement of his chase after the automobile thieves. Write NOW for

FREE Confidential Reports

No. 38 Made to His Chief!

It may open your eyes to the great opportunity for YOU as a well paid Finger Print Expert. The kind of work you'd like, Excitement! Travel! Thrills! A REGULAR MONTHLY salary. REWARD MONEY. Over 800 of all Identification Bureaus in U. S. employ I. A. S. students or graduates! Write for Free Reports, Finger Print Book, low prices. Easy Terms Offer.

Literature will be sent only to persons stating their age.

INSTITUTE OF APPLIED SCIENCE
1920 Sunnyside Ave., Dept. 1366, Chicago 40, Illinois

MECHANICS: LEARN ABOUT THE HYGRADE SYSTEM OF CARBURETOR REBUILDING

Do it now: open a profitable Hygrade System Carburetor Rebuilding Dept. For FREE info, send your billhead to HYGRADE, 37-18H, Northern Blvd., Long Island City 1, N. Y.

HYGRADE FINGERTIP SYSTEM

Your BOY WILL LOVE IT! *NEW BULLDOZER TRACTOR*

Ideal for Children up to age of 12.

Give your youngster the thrill of accomplishment. He'll do all kinds of "play work" with this NEW Tractall Bulldozer Tractor. Chain Driven. SOLD DIRECT. Write for **FREE** literature today.

INLAND MFG. CO., 164 Ellicot St., Dept. PS-9, Buffalo 3, N.Y.

LAWN ORNAMENT - NOVELTY PATTERNS

28 Lawn Ornament Patterns, 25c. Other patterns: 15-20" high: Dutch Girl, Dutch Boy, Pirate, Bull Terrier, Mexican Girl, Mexican Boy, Dwarf, Penguin, Flower Girl, 10c each. 25 Novelty Patterns, 30c. **All 62 Full Size Patterns, $1.00 Postpaid.**

• FLYING DUCK

Wind revolves wings. Realistic appearance. Pattern, Instructions and wing Pinion Kit; brass bearing, steel shaft, wing lugs, bolts, nuts and washers, 75c. Pattern and Instructions without kit, 25c. Postpaid.

STROTHER PATTERN SERVICE
Dept. 7-CS Box 128 Bellington, W. Va.

HYDROPONICS

BIG FREE Illustrated Book

Fascinating Hobby! • Profitable Business!

You can grow vegetables, flowers or rare plants WITHOUT SOIL (Hydroponics) **every day of the year.** Learn the fast, clean, pleasant way to grow **any** plant indoors or out. No experience needed. Realize BIG RETURNS from a limited space. Amazing opportunity for real profits. Send postcard today for free picture book showing how others from every state are succeeding in this wide open field. Act now! Send for complete facts today.

CHAS. GILBERT CO., Box 22-S, San Diego 6, Calif.

There's BIG MONEY in UNIFORMS and Work Clothes that ADVERTISE!

Every business and businessman is swinging over to employee uniforms and work clothes, embroidered with company name, trademark, sales message, etc. The field is new. Prospects are everywhere: garages, service stations, factories, coal dealers, dairies—and hundreds more. Profits are huge. You take orders by the dozen and gross! One man made over $800.00 on a single sale! You get the business everytime because you offer latest, finest fabrics. Big selling kit Free!

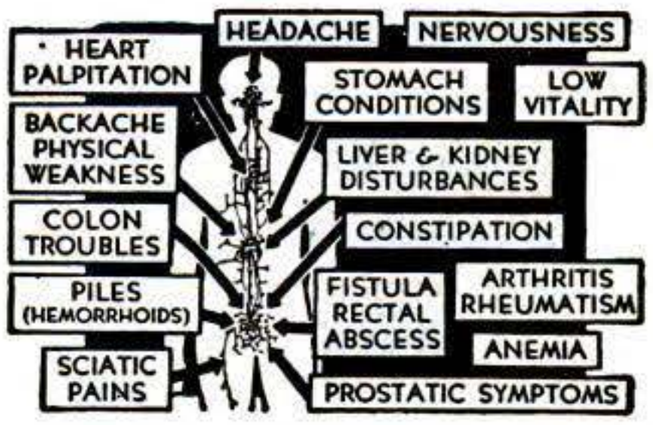
••• ORLON •••
Available Soon!
TOPPS will be *first* with uniforms made of Dupont's miracle ORLON! They promise fantastic profits! Get details now!

TOPPS, Dept. 629, Rochester, Indiana

Copyrighted material

Piles May Lead to Chronic Ailments

FREE BOOK—Explains the Causes and Effects



No obligation. Write to Thornton & Minor Hospital, Suite 949, 911 E. Linwood, Kansas City 3, Mo.

ILLUSTRATED CARTOON BOOKLETS!

SAY FELLOWS! BE THE LIFE OF THE PARTY WITH THESE SMALL ILLUSTRATED CARTOON BOOKLETS OF COMIC CHARACTERS!

10, ALL DIFFERENT, $1 POSTPAID

SORRY—NO POSTAL C.O.D.'S!

REGINALD SALES

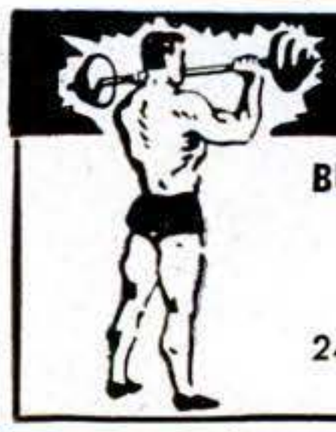
210 L Fifth Ave., New York, N. Y.

INVENTORS

If you have working models, blue prints, or patents, covering "special use" parts or assemblies for Chevrolet, Ford, or Plymouth Cars, it will be to your advantage to get in touch with us. Write us at the factory. Dept. PS

NATIONAL MACHINE WORKS, INC.

P. O. BOX 4305 AUTOMOTIVE PARTS MANUFACTURERS OKLAHOMA CITY 9, OKLA.



Bar Bells

BUY DIRECT FROM FACTORY

Write for free booklet and price list

$8.95 up

INDEPENDENT IRON WORKS
2416 East 23rd Street, Dept. "C"
Los Angeles 58, Calif.

BATTERIES START A FACTORY AT HOME

—and re-cast junk batteries into new, with and without new materials; the latest achievement. We supply complete instructions and everything needed. Large daily profits.

BATTERY LABORATORY SCHOOL
DEPT. PSM, MINNEAPOLIS 4, MINNESOTA

Opportunity OF A LIFETIME!

SELL AIR CUSHION SHOES

Build a permanent "repeat" business of your own without one penny of investment! Sell John Neil Air-Cushion Shoes Direct from famous New England factory. Firestone Foamex cushions — complete line of men's dress, work, safety shoes! DuPont Neoprene non-marking soles, Women's and children's shoes. Fast deliveries from our mammoth stock department.

Earn up to $30.00 per day!

Write for FREE catalog today!

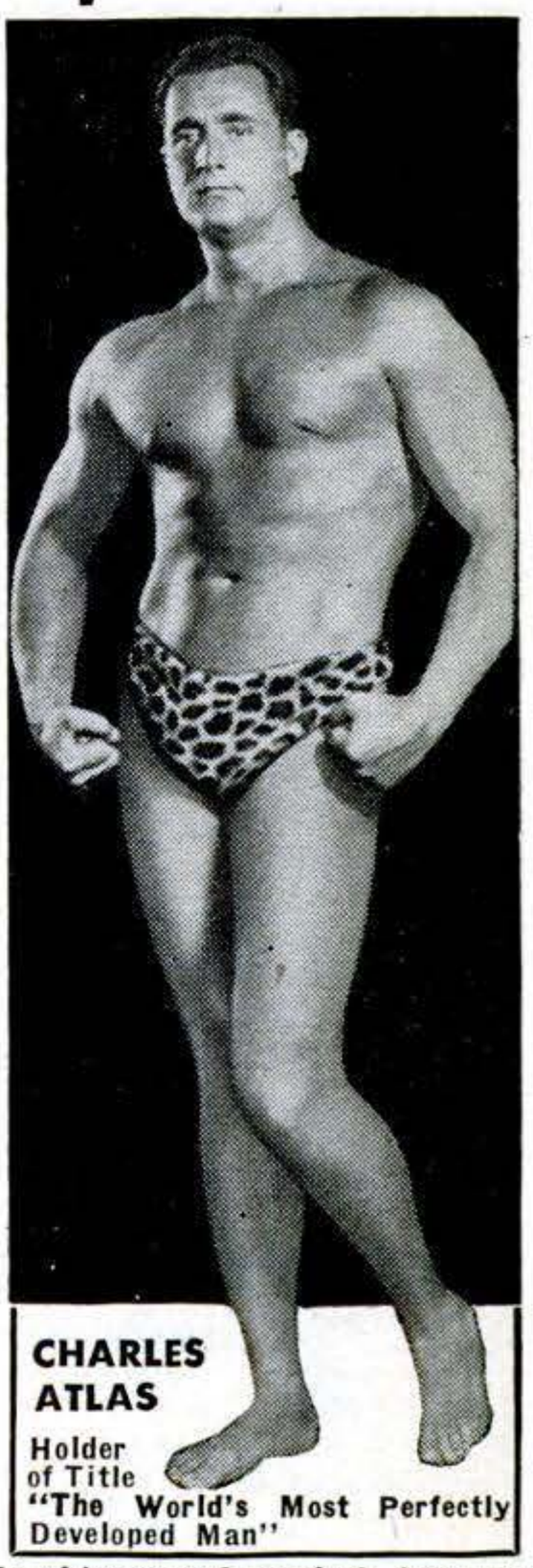
JOHN NEIL SHOE CO.
DEPT. 50 — Brockton 64, Mass.

The 97 Pound Weakling

who became "The World's Most Perfectly Developed Man"

"I'll Prove that YOU, too, can be a NEW MAN!"

Charles Atlas



CHARLES ATLAS
Holder of Title "The World's Most Perfectly Developed Man"

I KNOW, myself, what it means to have the kind of body that people pity! Of course, you wouldn't know it to look at me now, but I was once a skinny weakling who weighed only 97 lbs! I was ashamed to strip for sports or undress for a swim. I was such a poor specimen of physical development that I was constantly self-conscious and embarrassed. And I felt only HALF-ALIVE.

Then I discovered *"Dynamic Tension."* It gave me a body that won for me the title "World's Most Perfectly Developed Man."

When I say I can make you over into a man of giant power and energy, I know what I'm talking about. I've seen my new system, *"Dynamic Tension,"* transform hundreds of weak, puny men into Atlas Champions.

Only 15 Minutes a Day

Do you want big, broad shoulders—a fine, powerful chest—biceps like steel—arms and legs rippling with muscular strength—a stomach ridged with bands of sinewy muscle—and a build you can be proud of? Then just give me the opportunity to prove that *"Dynamic Tension"* is what you need.

No "ifs," "ands," or "maybes." Just tell me where you want handsome, powerful muscles. Are you fat and flabby? Or skinny and gawky? Are you short-winded, pepless? Do you hold back and let others walk off with the prettiest girls, best jobs, etc.? Then write for details about *"Dynamic Tension"* and learn how I can make you a healthy, confident, powerful HE-MAN.

"Dynamic Tension" is an entirely NATURAL method. Only 15 minutes of your spare time daily is enough to show amazing results—and it's actually fun! *"Dynamic Tension"* does the work.

FREE—My 32-Page Illustrated Book

Send NOW for my famous book, "Everlasting Health and Strength." 32 pages, packed from cover to cover with actual photographs and valuable advice. Shows what "Dynamic Tension" can do, answers many vital questions. Page by page it shows what I can do for YOU.

This book is a **real prize** for any fellow who wants a better build. Yet I'll send you a copy absolutely FREE. Just glancing through it may mean the turning point in your life! Rush the coupon to me personally: **Charles Atlas, Dept. 1W, 115 East 23rd St., New York 10, N. Y.**

CHARLES ATLAS, Dept. 1W,
115 East 23rd St., New York 10, N. Y.

Send me—absolutely FREE—a copy of your famous book, "Everlasting Health and Strength"—32 pages, crammed with actual photographs, answers to vital health questions, and valuable advice to every man who wants a better build. I understand this book is mine to keep, and sending for it does not obligate me in any way.

Name..... Age.....
(Please print or write plainly)

Address.....

City..... State.....

Copyrighted material

CORTINA
makes it FUN *to*

SPEAK FRENCH-SPANISH

RUSSIAN-GERMAN
ITALIAN-BRAZILIAN-JAPANESE

"Learn by Listening" to **CORTINA RECORDS**, at home, the **NATURAL** way — quickly, easily, cheaply.

Only 15 Minutes a Day!

The **CORTINA** method, **famous for 70 years**, teaches you to speak like a native. **THOUSANDS** have found it the most fascinating, most effective way to learn languages for **Pleasure, Business, Travel, Culture. INVESTIGATE!**

Send For FREE BOOK!

Illustrated 32-page book, "The Cortinaphone Short-Cut" sent **FREE.** No obligation. Tells just what you want to know. **Interesting. Get it!**

ALL NEW RECORDINGS ON UNBREAKABLE RECORDS — **WRITE TODAY**

CORTINA ACADEMY (Est. 1882)
Suite 129, 105 W. 40 St., N. Y. 18, N. Y.
Please send me — without obligation — your free book.
I am interested in (check)
☐ French ☐ Spanish ☐ German ☐ Italian ☐ Brazilian
☐ Russian ☐ Japanese

Name.....
Address.....
City.....State.....
☐ **VETS!** Check if NOW eligible under G. I. Bill.

PUMP WATER *FAST!*

DRAIN WASH TUBS, CELLARS, CISTERNS
IRRIGATE—FILL TANKS—DRAW WELL WATER

Pumps 2800 GPH. 420 GPH at 75' High or 1600 GPH from 25' well. Sturdy, Rustproof Alloy Metal. Six Blade Impeller. Uses any 1/8 to 1/2 H.P Motor Will not leak or clog. Fits any garden hose. Immediate Money Back Guarantee. Send Check, M O, or C.O D. **8.95** IN U S

MOORE MANUFACTURING CO.
SWEDESBORO 2 NEW JERSEY

BIG OPPORTUNITIES OPEN IN THE METAL TRADES

* Drafting
* Tool & Die Designing
* Tool & Die Making
* Machinist Trade

Only 60 school days- 360 Hours- of practical Shop Training or Mechanical Structural or Aircraft Drafting

Allied will train you easily and quickly for these Important Trades and place you on a Good Paying Job.

Inquire about our PAY AFTER GRADUATION PLAN

Write for **Free Books** a postcard will do!

INDICATE PREFERENCE - RESIDENT or HOME STUDY

ALLIED SCHOOL of MECH. TRADES
408 ALLIED BLDG. 1338 S. Michigan Ave. Chicago, Ill.

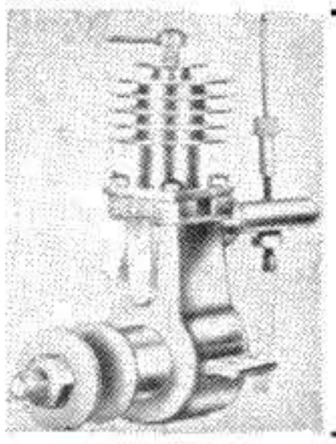
BOYS-IT'S FREE!

...NEW, EXCITING 16-PAGE BOOK on magic and marvels of chemistry

Shows you how to amaze friends with eye-opening tricks of chemical magic . . . like changing water to blood and blood to stone. Tells you how to do many fascinating home experiments and shows you the big, new Chemcraft outfits. Describes fun, thrills, adventure you can have with a Chemcraft chemistry outfit of your own. Send now for free copy to Porter Chemical Co., 50 Prospect Ave., Hagerstown, Md.

Chemcraft Senior Lab.

HEY FELLAS! ask Dad for **CHEMCRAFT**



Our 540th Advertisement

REAL DIESEL ENGINE

$2.95
- for planes, boats, midget cars
- 7500 RPM; 1/7 HP; ht. 3½"; wt. 5 oz.
- precision machined for smooth operation

You just can't beat this price for a precision diesel engine! Streamlined, compact, easy to install. Thousands of satisfied users all over the world. Fast delivery if you ORDER TODAY! Send $2.95 plus 25c postage.

Gotham Hobby Corp. Dept. S, 107 E. 126th St. New York 35, N.Y.

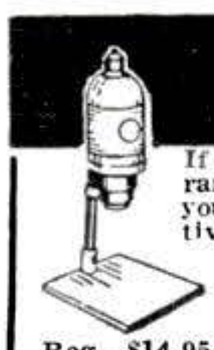
SHIP MODEL KITS

Largest supply in New England. Fittings — Blueprints — Books. All prices. Write Dept. PS52. BIG ILLUSTRATED CATALOG 25c

JAMES BLISS & CO., INC.
342 Atlantic Ave., Boston 10, Mass.

120 Years in Business

Anyone can make enlargements with the
SUNRAY ENLARGER $9.95 *with case and lens*



If you thought enlarging required a fancy investment not warranted for beginners or not-too-serious amateur photographers, you were wrong! For with the Sunray you can enlarge negatives from 35mm to 2¼ x 3¼" with a total outlay of $9.95 plus cost of a few basic accessories. Sunray enlarger is compact, portable, comes complete with bulb, lens, negative holder, ready for use in seconds, yet instantly disassembled without presenting the usual storage problem. Reg. $14.95. *Shipping Cost $1.00. Cash orders postpaid. Include $3.00 deposit with C.O.D.'s.*

SPIRATONE, Dept. PS, 49 W. 27 St., N. Y. 1, N. Y.

ILLUSTRATED COMIC BOOKLETS POCKET SIZE!

THEY'RE TERRIFIC! PACKED WITH RARE CARTOONS *and* GOOD CLEAR ILLUSTRATIONS AS YOU LIKE IT. RICH IN FUN *and* HUMOR. *20 BOOKLETS* ALL DIFFERENT, SENT PREPAID FOR $1 IN PLAIN SEALED WRAPPER. NO C.O.D.s.

NATIONAL, Dept. 478, BOX 5-STA. E, TOLEDO 9, OHIO

How To Hold FALSE TEETH More Firmly in Place

Do your false teeth annoy and embarrass by slipping, dropping or wobbling when you eat, laugh or talk? Just sprinkle a little FASTEETH on your plates. This **alkaline** (non-acid) powder holds false teeth more firmly and more comfortably. No gummy, gooey, pasty taste or feeling. Does not sour. Checks "plate odor" (denture breath). Get FASTEETH today at any drug store.

Copyrighted material

SENSATIONAL

OPTICAL BARGAINS

AMAZING INSTRUMENT! ASTOUNDING VALUE!

POCKET MICROSCOPE

Adjustable! 20, 40, 60 POWER!

A compact, handy precision instrument of many uses. Select power you want, then focus sharply by turning special micro-focus ring. Highest quality optics. Full satisfaction guaranteed.

Stock #30005-N ..... **Only $2.95 Postpaid**

SLIDE PROJECTOR SETS — **Consists of all unmounted lenses you need to make the following size projectors:**

Stock #4029-N—35 mm ..... **$2.85 Postpaid**
Stock #4038-N—2¼"x2¼" ..... **$3.35 Postpaid**
Stock #4039-N—2½"x3½" ..... **$3.35 Postpaid**

SIMPLE LENS KITS—Include plainly written, illustrated booklet showing how you can build lots of optical items. Use these lenses in photography and for dozens of other uses in experimental optics, building TELESCOPES, low power Microscopes, etc.

Stock #2-N—10 lenses ..... **$ 1.00 postpaid**
Stock #5-N—45 lenses ..... **5.00 postpaid**
Stock #10-N—80 lenses ..... **10.00 postpaid**

We Have Literally Millions of War Surplus Lenses and Prisms for Sale at Bargain Prices. Numerous Types of Instruments, Too! Write for FREE CATALOG-N

EDMUND SCIENTIFIC CORP., Barrington, N. J.

SMALLEST .22 AUTOMATIC $37.50

.22 VB Bernadelli Baby Automatic. Meets sportsmen's demand for Pocket Automatic using .22 LONG or SHORT cartridges. State preference. Packs a punch! Easy to carry. Weighs 9 oz. 6 shot magazine. 2⅛" barrel. 4⅛" overall. Blued. Non-projecting sights. Orders must state "I am not a minor, alien, fugitive from justice, under indictment, or been convicted of a crime of violence." Shipped F.O.B. C.O.D.'s and overseas orders cannot be accepted. *Mail Orders Only.* Satisfaction or Money back!

UNITED ARMS, 9043 S. Western Ave., Dept. FA-1355, Chicago 20.

FOR BIG MEN ONLY!

SIZES 10 to 16 — **WIDTHS AAA to EEE**

We specialize in large sizes only. Shoes in wide style variety; sox, rubbers, overshoes, shoe trees. Send for FREE Catalog *TODAY!*

SEND FOR FREE CATALOG

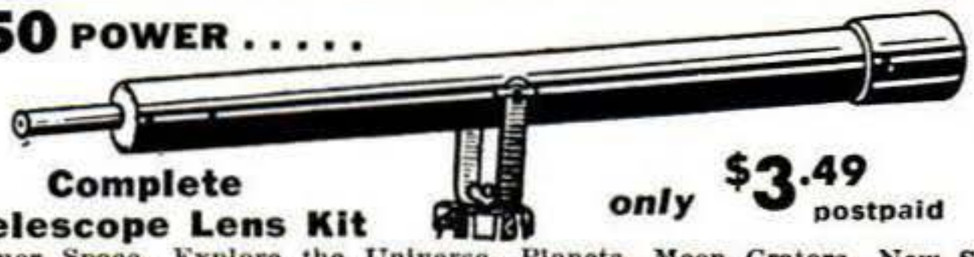
KING-SIZE, Inc., 944, Brockton, Mass.

make your own *Gems* 29.50 F.O.B.

All necessary lapidary equipment is furnished, including a super-charged diamond blade for sawing, and all wheels for grinding, shaping and polishing; also complete instructions. The complete equipment as shown, less motor and belt, for only $29.50, f.o.b., Burlington, Wisconsin. Write today for information and literature.

B&I MANUFACTURING CO.
Dept. M Burlington, Wis.

250 POWER .....



Complete Telescope Lens Kit *only* **$3.49 postpaid**

Conquer Space, Explore the Universe, Planets, Moon Craters, New Stars, etc. Complete Lens Kit consists of 80 inch focal length ground and polished objective lens, eyepiece lenses for 50 POWER, 100 POWER, 150 POWER, 200 POWER, 250 POWER, and all necessary lens fittings. Easy to make from simple step by step instructions. (Tripod and mount not included.) Money back guarantee.

BUSSE SALES CO., Hartford, Conn., Dept. PS-6

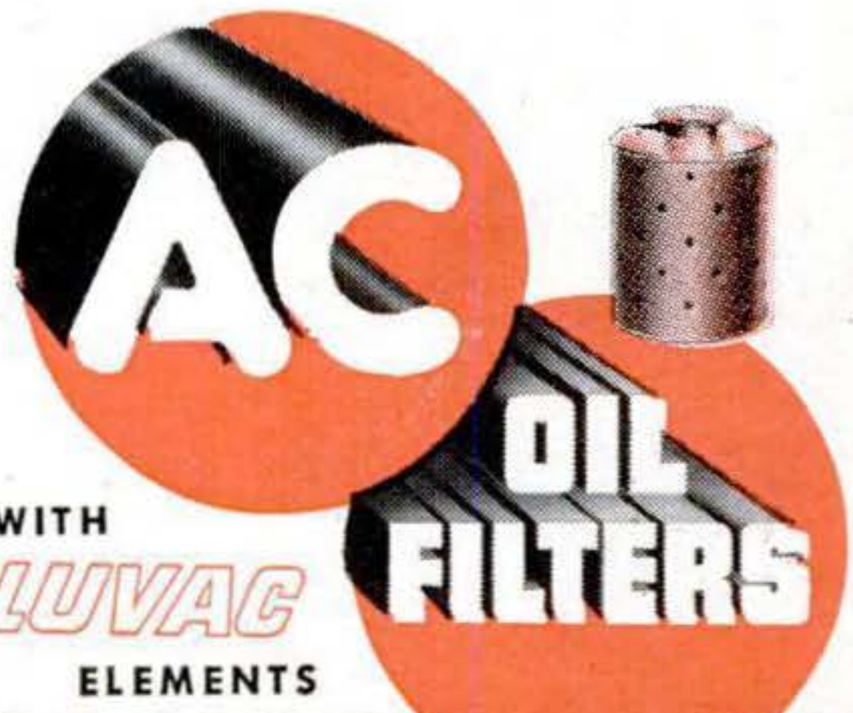
Protecting the Performance of the BUICK XP-300

As you might imagine, there's far more to this experimental car than its striking styling. For, under its graceful hood, there's a giant of an engine that is destined to change many present-day concepts of motoring performance.

To protect the performance of its 335-horsepower engine, Buick engineers specified the exclusive use of AC Oil Filters with Aluvac Elements!

Aluvac is the AC-developed filtering material that removes dirt particles as small as 1/100,000 of an inch from engine oil. It's unaffected by moisture, hot oil and harmful crankcase acids.

Aluvac Elements are available for almost every car. Ask for one next time your oil is changed.



AC SPARK PLUG DIVISION GM GENERAL MOTORS **GENERAL MOTORS CORPORATION**

Copyrighted material

Start a Business in Your Backyard

Earn BIG MONEY MAKING BUILDING BLOCKS

General Concrete Vibrator
BLOCK MACHINE
CAPACITY 1000 BLOCKS A DAY
Only $218 LESS MOTOR F.O.B. PLANT
SHIPPING WEIGHT 400 LBS.

Here is a business you can start on small capital—in your own backyard—that earns 100 to 150% profit, with unlimited opportunities. Make concrete or cinder blocks. Millions used for homes, factories, public buildings, garages. Sell all you make to building trade. Do it with a General—and you're headed for success.

1000 BLOCKS A DAY

The General is a high speed, power-driven block machine at amazingly low cost. Rugged all-steel construction. Simple to operate indoors or outdoors. Makes superior 3 core type block meeting all code requirements. Produces up to 1000 blocks per day. Full operating instructions and mixing formulas supplied. Write for FREE details.

Dealer inquiries invited

Wonderful Book Written & Illustrated by Experts

HOW TO BUILD YOUR OWN CONCRETE BLOCK HOME
Only $1 Prepaid

GENERAL ENGINES CO.

DEPT. S-92 • 307 HUNTER ST. • GLOUCESTER, N. J.

Includes floor plans for 6 beautiful, easy to build concrete block bungalows. Shows ways to save money. How to lay blocks, lay out building lines, mix concrete, build steps, porches and concrete floors. Mail coupon at once with $1.

Name.....
Address.....
City.....Zone...State.....

AUTO BODY MEN
Expd. comb. paint and metal; excel. cond., high earnings; Olds. dir. Norman Motors, 1012 Chicago-av., Evanston. University 4-4100.

AUTO body and fender man w[illegible] paint. Also good h[illegible] 661 E.

AUTO BODY MEN—[illegible] TOOLS READY FOR [illegible] 2[illegible]60 S. MICHIGAN.

AUTO body fender man [illegible] 50-[illegible] 551[illegible] W. H[illegible]on.

[illegible] fender [illegible]ation [illegible] 7 W. L[illegible]e.

AUTO [illegible] mechan[illegible] must be good $100 [illegible] 700 [illegible]-av.

AU[illegible] 35[illegible] W[illegible]rence-av.

AUTO BODY-FENDER MAN
Ideal working conditions; top [illegible]y. Woodbury [illegible] 4930 [illegible]n.

AUTO [illegible] MAN
Ex[illegible] apply. Good pay [illegible] work. 3939 WASHINGTON.

AUTO BODY, FENDER MEN—WA[illegible]D IMMEDIATELY. MU[illegible] EXPERIENCED. HIGHEST WA[illegible] [illegible]IN PER[illegible]. Auto [illegible]uilders. [illegible]st.

U[illegible] mech[illegible] exp. [illegible] tu[illegible] over [illegible] and br[illegible] ha[illegible]wn to $1[illegible]0 [illegible]rantee. Pa[illegible] Tow[illegible] Motor, [illegible]ler-Frazer De[illegible] 5351 [illegible]nd.

AUTO BODY MEN
To work on cars and trucks. LIncoln 9-5833.

Auto Body Craftsmen WANTED!

Learn This Craft—Earn Big Money

Look at the Help Wanted ads in your paper. The billion-dollar auto repair trade needs trained men NOW! The demand is big . . . pay is big . . . opportunities are great. You have a chance to grow with this growing trade, perhaps set up **your own profitable shop.**

CASH IN ON YOUR SPARE TIME!

You can begin your Auto Body & Fender Training at home in spare time with the **proven** UEI plan. You learn about appearance reconditioning, metalwork, painting, welding, other practical phases without leaving your present job. Then get actual practice in our large, well-equipped shops, repairing wrecked cars under the guidance of skilled instructors. Get FREE book and all the facts by sending coupon NOW!

UTILITIES ENGINEERING INSTITUTE Auto-Crafts Div. **2523 Sheffield Ave., Dept. XM-16, Chicago 14, Ill.**

MAIL TODAY FOR FREE FACTS

UEI *has been training men for industry since 1927.*

Auto-Crafts Div.
UTILITIES ENGINEERING INSTITUTE
2523 Sheffield Ave., Dept. XM-16, Chicago 14, Ill.

YES! Rush FREE Book and full facts on Auto Body & Fender Repair Training.

Name..... Age.....
Address.....
City.....Zone or County.....State.....
( ) Check for special information if under 17.

OIL FILTER REFILLS . . . 10c

Here's News! Ordinary toilet paper makes an ideal oil filter. Laboratory tests prove it cleans oil faster and better than popular makes of filter elements. All you need is a simple set of **RETLIF ADAPTER PLATES** . . . and you can start using ordinary toilet paper rolls in your present oil filter. For proof and descriptive literature, send name and address to:

RETLIF CORPORATION, Dept.104
1239 No. Highland Ave., Los Angeles 38, Calif.

MANAGEMENT PRODUCTION

Production experts earn big money. Thousands of firms need them. We train you thoroughly at home in spare time for management positions. Previous experience unnecessary. Personal training under supervision of production management authorities. Placement counsel and help. Write for FREE book "Industrial Management."

LASALLE Extension University, 417 So. Dearborn St.
A Correspondence Institution, Dept. 983IM, Chicago 5, Ill.

MAKE MONEY with Bostonian SHIRTS

Take orders for famous line finest quality dress and sport shirts. Also women's man-tailored blouses. All styles, fabrics, colors, sizes. *Low Prices.* No experience needed. **FREE** Big, beautiful Sales Kit with actual fabric samples. Send no money, but rush name *now!* **Bostonian Mfg. Co., 89 Bickford St., Dept. S-41, Boston 30, Mass.**

Build your own *JET ENGINE!*

Order these plans today

1. JET PROPELLED BICYCLE. Assemble your own. Photo and instructions $1.00.
2. HOW TO MAKE EXPERIMENTAL JET ENGINES. Seven sheets drawings with information and instructions $2.95.
3. BOTH OF ABOVE in one order $3.75.

SEND NO MONEY. Order both at once $3.75 C.O.D. in USA plus c.o.d. postage. Send check or Money Order and we pay postage. Get other information too. Rush Order.

J. HOUSTON MAUPIN, Dept. 66, Tipp City, Ohio

SENSATIONAL SALE 25c, 526 Different Genuine Stamps

Includes rare KOREA temples set complete! These were obtained for us by a GI at the scene of the Kaesong Conference. Also new San Marino "Columbus" set, sport stamps, airmails, unique Spain Civil War "submarine" stamp, Indonesia, 1904 Nicaragua error with surcharge inverted. Vatican, Israel, Roosevelt stamps, first stamp of Greenland, etc. ALL in our collection of 527 different genuine stamps. A bargain at our regular price of $3.98 but now only 25c to introduce our bargain approvals to you.

NATIONAL STAMP SALES, Dept. AT
832 Eighth Avenue, New York 19, N. Y.

MEN—WOMEN! HAVE YOUR OWN

REWEAVING

STUDIO AT HOME — *SPARE OR FULL TIME*

MAKE GOOD MONEY REWEAVING Burns, Tears, Moth-holes in Suits, Dresses, Etc., — LIKE NEW. LEARN FRENCH INVISIBLE METHOD FROM RECOGNIZED AUTHORITY. **No previous experience needed. Amazing new device, the VISUAL WEAVER, makes learning easy. Big profit orders come from Homes, Cleaners, Dept. Stores—also mail orders. Up to $5 an hour possible. No overhead or expense for materials. Complete instructions yours to examine at home WITHOUT RISK. FREE details — write NOW. Airmail reaches us overnight. SKIL-WEAVE CO., Suite 229 1717 WESTWOOD BLVD., LOS ANGELES 24, CALIFORNIA**

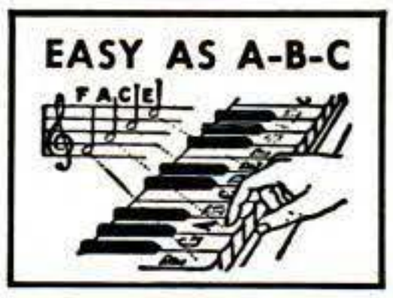
Copyrighted material

EVEN IF YOU DON'T KNOW A NOTE OF MUSIC NOW...

You Can Learn Your Favorite Instrument This Easy A-B-C Way

No special talent, no previous musical training needed. This remarkable U. S. School home-study method is so successful because you learn to play by playing real tunes by note, right from the very start.

Once you start a U. S. School Course you look forward to the time you spend on your lessons. No tiresome exercises. No long-winded explanations. Instead of hard work, learning to play becomes a happy pastime. You begin with simple melodies. As you improve, you take up more advanced tunes. Sooner than you ever dared hope you're thrilled to find yourself playing many popular numbers by note. And no matter which instrument you take up, the cost is only a few pennies a day.



FREE BOOK AND FREE LESSON-SAMPLE

If you honestly want to learn music, to be invited everywhere, and get lots more fun out of life, send in the coupon below for our FREE 36-page Book and Free Lesson-Sample. They give full details. (Special prices on instruments to our students.) **U. S. SCHOOL OF MUSIC**, Studio B159, Port Washington, N.Y.

(Now in Our 54th Successful Year)

U. S. School of Music, Studio B159, Port Washington, N. Y.

Send me FREE BOOK and FREE Lesson-Sample. No obligation—and no salesman is to call upon me. I'm interested in playing (name instrument) _____

☐ I do ☐ I do **not**—have instrument now.

Name _____ (please print)

Address _____

City _____ State _____ (Please state Zone No. (if any))

LAWNMOWER SHARPENER OPERATORS

Increase your output... Year 'round business!

NEW BED KNIFE GRINDER
sharpens all
STRAIGHT EDGE TOOLS

New Ideal Bench Grinder

doubles your output of sharpening jobs, speedily grinds straight blade knives. Sharpens all kinds of straight edge tools and ice skates. Write for FREE, fact-filled folder.

THE FATE-ROOT-HEATH COMPANY
Dept. PS-9, Plymouth, Ohio

A SMOOTHER BETTER SHAVE

Money Back Guarantee!

If you will use the Shave-Ease System one time, we guarantee that your shaves will be smoother and better, for the rest of your life, with no burns, razor cuts or any of the ill after effects from improper shaving. The Shave-Ease System and reasons why you should use the Shave-Ease System of instructions for shaving are the most logical and simple instructions ever offered to men who shave with a safety or straight edge razor. Remember the Shave-Ease instructions are guaranteed to give you the best shave you ever had or money back. So if you want to really enjoy your shaving—send $1.00 today.

SHAVE-EASE SYSTEM **Dept. E-5**
6605 Hollywood Blvd. **Hollywood, Calif**

MEN-WOMEN

Paint it with Suede!

SPRAY ON RAINBOW COLORS... for PROFIT and PLEASURE!

FLOK-KRAFT COVERS...
- PLASTER
- FABRICS
- METAL
- PLASTIC
- RUBBER
- WOOD—ANY SURFACE

FLOK KRAFT

A SENSATIONAL NEW HOME BUSINESS

A NEW INDUSTRY... A NEW MIRACLE FINISH!

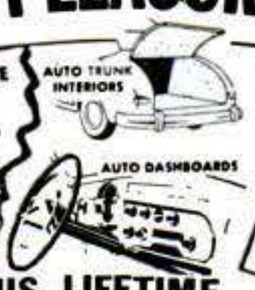
MAKE $5 to $10 PER HOUR *and more!*

YOU CAN LEARN IN A FEW DAYS!
Make to $5.00—yes! even $10.00 and more hourly. Complete, easy-to-understand Flok-Kraft instructions show you how to start on the road to big money, full or spare time.

PROFESSIONAL SECRETS CAN BE YOURS
At last, secrets of amazing miracle finish can be yours! Huge profits waiting in tremendous new field. Flok-Kraft gives a velvety, luxurious surface to radios, lamps, toys, signs, store displays, figurines, auto dashboards—a 1001 items on every hand easily — quickly beautified, increased in value with Flok-Kraft. Make old objects beautiful—saleable, make new ones worth much more. This soft, rich covering can be applied to any surface, even if old or worn.

WE FURNISH EVERYTHING YOU NEED TO START
Complete Flok-Kraft kit and equipment enables you to start at once. Add to your income from your regular job or begin to build your own successful business in corner of your basement, garage, service porch or kitchen.

FLOK-KRAFT and DEFENSE
Flok-Kraft offers a way to big, extra money, assisting defense manufacturers in many lines as well as filling a big demand on the home front.



I'll send you Everything at my Risk. Examine—THEN DECIDE. Nels Jaure

GRASP THIS LIFETIME OPPORTUNITY TODAY

I'll arrange to send you everything you need to start—for leisurely, no-risk examination in your home. You owe it to yourself to investigate. Write today for FREE details. Everything I send you now is FREE of charge and postpaid. Airmail is faster.

COAST INDUSTRIES,
Dept. 19, 1006 S. Los Angeles St., Los Angeles 15, Calif.

FREE SAMPLE, Booklet, Plan!

Copyrighted material

EAVESDROP...

behind the "IRON CURTAIN"!

hear Aircraft! Ships! Amateurs!

Sensational

TABLE RADIO
SW-54
$49.95

GUARANTEED RECEPTION ON 3 SHORTWAVE BANDS PLUS STANDARD BROADCAST

Turn the knob and — presto! — Radio Moscow is pouring propaganda into your ears! Turn it again and hear music from Paris, or amateurs chatting, or an aircraft control operator! Thousands have discovered a whole new world of listening pleasure with the "Mighty Midget," by the makers of radio equipment for the famed Kon-Tiki Expedition. Write for details and name of nearest supplier.

NATIONAL COMPANY, INC.
61 Sherman St., Malden, Mass.

MOST PROFITABLE TOOL IN YOUR WORKSHOP

Welds • Cuts • Solders • Brazes • Heats • Even Charges Batteries

Earn Spare Money in Your Spare Time

Here's an exciting yet profitable pastime. Your "Lincwelder 60" builds garden furniture, handrails, ventilators . . . hundreds of things for the house. Repairs fenders, car bodies, garden tools. Solders wires, torch heats to bend steel or harden tools. Users report earnings quickly pay for their welders.

"LINCWELDER 60"
Low in Price • Easy to Use

- Comes complete with instructions
- Operates on 115 volt grounded circuit (No. 12 wire fused for 20 amps)
- Approved by Underwriter's Laboratories
- Built by The Lincoln Electric Co. The World's Largest Manufacturer of Arc Welding Equipment.

ORDER NOW

Fill out and mail to Dept. 203 The Lincoln Electric Co., Cleveland 17, Ohio

☐ Ship me the "Lincwelder 60" with accessories $48.00. (Including headshield, electrodes, carbons, electrode holder, ground clamp and cable.) ☐ Arc Torch $6.25 extra.
☐ Battery Charging Attachment $10.00 extra.
Enclosed is ☐ check ☐ money order.
☐ Send me free bulletin on the new "Lincwelder 60".

Name_____
Address_____
City_____ State_____ 203

---

5 Year Written Guarantee NEW 17 JEWEL INCABLOC WATCH WAS $50 NOW ONLY $13.95

DROP IT! WET IT! BANG IT!

Incabloc shock proof. Waterproof. Dustproof. Tested best in Army and Navy Service. Anti-magnetic. Imported accurate Swiss lever movement. Sweep second hand. Radium dial.

10 DAY FREE TRIAL

SAVE $36 IN BANKRUPT FACTORY STOCK SELLOUT

Wear at our risk. Money back if not pleased. SEND NO MONEY. Pay postman plus tax and postage. Or enclose $13.95 plus $1.40 tax for men's watch, and we ship prepaid. (Ladies' model $15.95 plus $1.60 tax). Order now. Receive $2 expansion band free with prepaid order.

SAVE $36

STANLEY SALES CO., Dept. B, Long Island City 4, New York

---

60 POWER TELESCOPE $3.95

VARIABLE EYEPIECE 20 x 40 x 60—BRASS BOUND

NEW! Three telescopes in one. 3 different magnifications. 20 power for ultra-bright images with 40 and 60 power for extra long range. Guaranteed to bring distant objects, people, sports events, ships, moon, stars, etc. 60 times as close. Most powerful for anywhere near the money. 5 Sections. Closes to 1 ft. long. Contains 4 ground and polished lenses. Also used as a powerful compound microscope. Directions included. Mass production enables us to offer this instrument at amazing price of $3.95 complete. Ready for immediate use. We pay postage. Get yours now.

CRITERION CO. **331 Church St.**
Dept. PSB-4 **Hartford 3, Conn.**

SOUND POWERED PHONES

No batteries needed. Your voice generates current. O.K. for 25 miles. Perfect intercom for shop, office, farm, darkroom. WAR SURPLUS. Orig. Govt. Cost $58.00 ea.

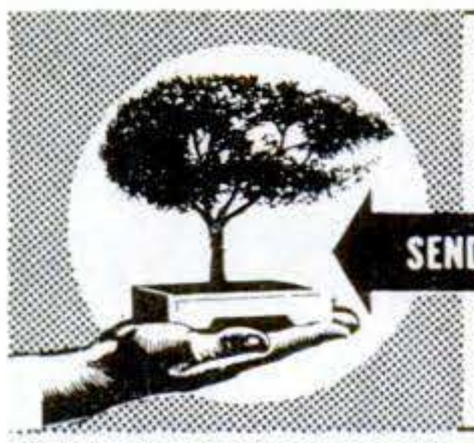
$10.95 Each *MONEY BACK GUARANTEE*
Postage Prepaid on Cash Orders

Semlers' ASSOCIATED SURPLUS
Dept. P-122, 5730 Wilshire Blvd., Los Angeles 36, Calif.

Make Extra Money

Full or Spare Time—With Famous
HOOVER UNIFORMS

No experience—no investment needed. Just show and take orders for best known line Uniforms for waitresses, beauticians, nurses, doctors, dentists, etc.—including DuPont Nylon Uniforms. It's easy work with Hoover—famous everywhere for smartest styles, top quality and value. FREE! Complete Style Display, details, money-making plans—write today. **HOOVER, Dept. HM-38, N.Y. 11, N.Y.**



GROW MINIATURE TREES

Grow authentic, LIVE dwarf trees!
Fascinating hobby! Fabulous profit!

SEND FOR FREE SEED & INSTRUCTIONS!

MINIATURE NURSERY CLUB
Dept. N, P. O. Box 18C96, Rimpau Sta.
Los Angeles 19, California

RUPTURED?

Get Relief This Proven Way

Why try to worry along with trusses that gouge your flesh —press heavily on hips and spine—enlarge opening—fail to hold rupture? You need the Cluthe. No leg-straps or cutting belts. Automatic adjustable pad holds at real opening — follows every body movement with instant increased support in case of strain. Cannot slip whether at work or play. Light. Waterproof. Can be worn in bath. Send for amazing **FREE** book, "Advice To Ruptured" and details of liberal truthful 60-day trial offer. Also endorsements from grateful users in your neighborhood. Write:

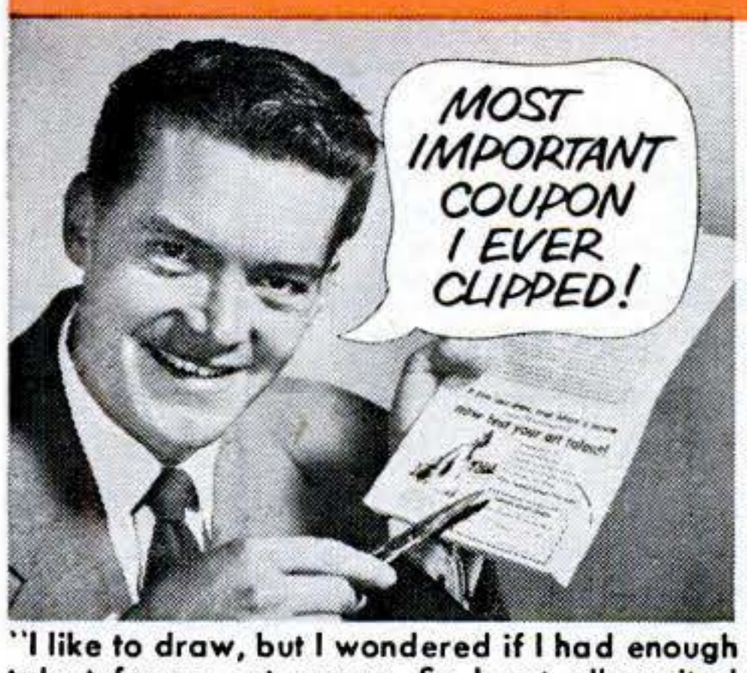
CLUTHE SONS, Dept. 14, Bloomfield, New Jersey.

Copyrighted material

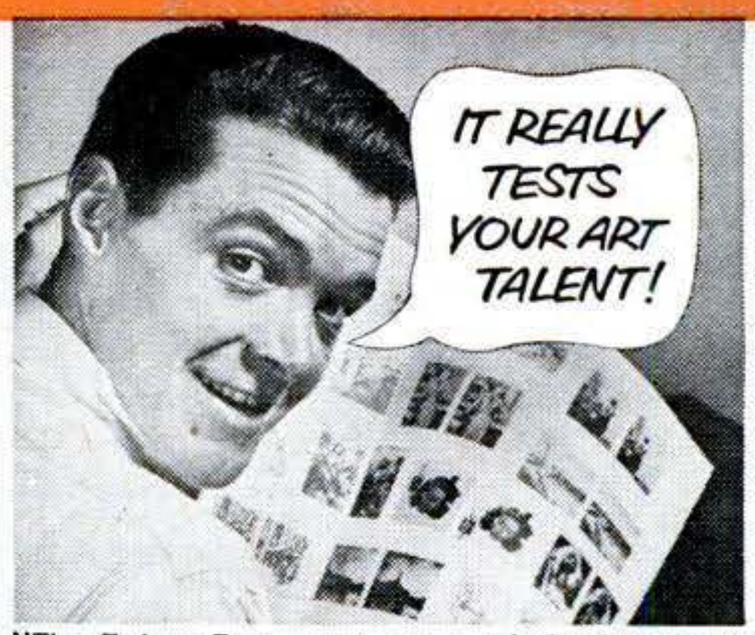
How the Famous Artists Course

FREE ART TALENT TEST

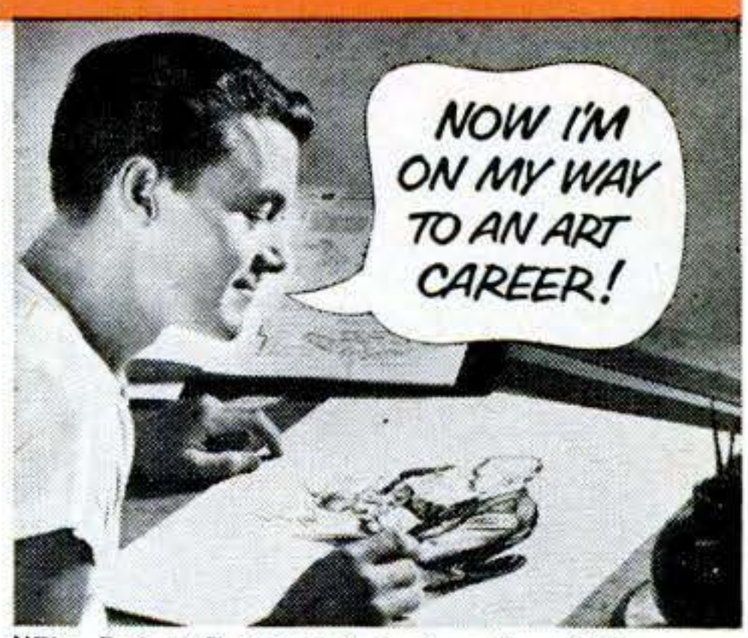
can put you on the road to a money-making art career!



"I like to draw, but I wondered if I had enough talent for an art career. So I got all excited about the Famous Artists FREE Talent Test! I sent for it right away!"



"The Talent Test gave me a whole new slant on art. It tested my talent in every way . revealed my imagination, sense of design, composition, form, originality and observation."



"The Talent Test convinced me I could have an art career! Now, by studying at home, in my spare time, I'm on my way, under the personal supervision of America's 12 Most Famous Artists."

This exciting test, printed on 8 large pages of drawing paper, has over 50 illustrations. Yours if you act today!

Norman Rockwell — Al Parker
Jon Whitcomb — Ben Stahl
Stevan Dohanos — Robert Fawcett
Harold Von Schmidt — Austin Briggs
Peter Helck — John Atherton
Fred Ludekens — Albert Dorne

CLIP THIS COUPON— MAIL TODAY

FAMOUS ARTISTS COURSE Studio 11-I, Westport, Conn.

Send me without obligation the FREE Famous Artists Talent Test

Mr. Mrs. Miss ..... Age .....

Street .....

City, Zone, State .....

"I'M MAKING MORE THAN $1000 a Month

Haven't Touched Bottom Yet!"

C. KAMA

—reports Charles Kama, Texas, one of many who are "cleaning up" with orders for PRESTO, Science's New Midget Miracle Fire Extinguisher. So can YOU!

Science's New Midget Miracle "PRESTO"

AMAZING **new kind** of fire extinguisher. Tiny "Presto" (about size of a flashlight!) does job of bulky extinguishers that cost 4 times as much, are 8 times as heavy. Ends fires fast as 2 seconds. Fits in palm of hand. Never corrodes. **Guaranteed for 20 years!**

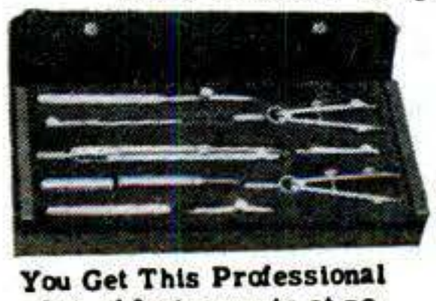
Show it to civil defense workers, owners of homes, cars, boats, farms, etc. and to stores for re-sale—make good income. H. J. Kerr reports $20 a day. Wm. Wydallis, $15.20 an hour. Write for FREE Sales Kit. No obligation. MERLITE INDUSTRIES, Inc., Dept. 119, 201 East 16th St., New York 3, N.Y. *IN CANADA: Mopa Co., Ltd., 371 Dowd St., Montreal 1, P.Q.*

(If you want a regular Presto to use as a demonstrator, send $2.50. Money back if you wish.)

DRAFTING

IS YOUR LADDER TO SUCCESS

It's EASY if you use CEI Simplified Training & Coaching



You Get This Professional Set of Instruments at no Extra Cost

YOU are needed for a vital job in essential industry! CEI will teach you Drafting *easily* and quickly in your spare time at home and help you get that job. Thousands have succeeded—so can YOU! CEI guarantees to train you until you qualify.

get FREE success book

Cleveland Engineering Institute
Extension Division PS9B
6300 Euclid, Cleveland 3, Ohio

☐ Aeronautical ☐ Mechanical
☐ Training at Institute in Cleveland

NAME .....
ADDRESS .....
CITY ..... STATE .....

No Obligation—No Salesmen

CLEVELAND ENGINEERING INSTITUTE

Copyrighted material

COMPLETE YOUR PATIO

WITH

FIBARLITE

The New Colorful Translucent Panels

Transmits light, reduces heat and glare, protects your hard-to-grow plants and outdoor furniture. Like an extra room. Shatterproof, weatherproof. Weighs only 8 oz. per sq. ft. Six beautiful colors.

BUILD IT YOURSELF

No special labor or tools required. Cuts with hand or power saw, installs with nails or screws.

89c SQ. FT.
F.O.B. LOS ANGELES

SEND SKETCH FOR FREE INSTALLING INSTRUCTIONS

N. C. SCOTT & ASSOCIATES
EXCLUSIVE NATIONAL DISTRIBUTORS
604 N. SAN VINCENTE, LOS ANGELES 46

LAW FREE BOOK

Your FREE copy of "The Law-Trained Man" shows how to gain prestige and greater earnings through Blackstone home law study. All instruction material furnished including 16-volume Law Library written by 65 well-known law authorities. Lawyers, judges among our graduates. LL.B degree. Low cost; easy terms. Write today.

BLACKSTONE COLLEGE OF LAW Dept. 126, Chicago 1, ILL. 225 N. Michigan Ave.

A Correspondence Institution Founded in 1890

FULLY GUARANTEED TIRES COST LESS!

Nationally famous **FIRESTONE, GOODRICH, U.S. ROYAL, GOODYEAR,** and other makes. Every tire selected and inspected for your safety.

SALE — SALE

FREE TUBE WITH EVERY PASSENGER TIRE

NEW TREAD TIRES GUAR. 24 MOS. (MUD & SNOW TIRES $1. EXTRA)

550x16	7.98	600x16(6)	9.98	650x20(8)	19.95	700x16(6)	14.48
550x17	7.98	650x15	9.98	640x15	8.98	710x15	10.48
600x15	7.98	650x16	10.48	670x15	9.98	760x15	11.48
600x16	7.98	650x16(6)	12.48	700x15	11.48	820x15	12.98

GOOD TIRES GUARANTEED 12 MONTHS

600x16	4.14	700x16	5.14	32x6(8)	8.84	825x20	14.24
650x16	4.54	670x15	4.74	32x6(10)	10.84	900x20	13.34
650x15	4.34	650x20	7.84	750x20(8)	8.54	1000x20	14.14
700x15	4.64	700x20(8)	8.94	750x20(10)	9.94	1100x20	16.14

AAA PREMIUM GRADE GUARANTEED 18 MONTHS

550x15	5.45	700x15	5.98	760x15	5.58	750x20(10)	14.98
600x16	5.28	700x16	6.78	550x17	5.48	825x20	18.68
600x16(6)	6.55	700x16(6)	7.98	600x20	9.78	900x20	18.98
640x15	5.68	750x16(6)	8.98	650x20	10.88	1000x20	19.98
650x16	5.78	800x15	6.88	700x20	12.88	1000x22	21.98
650x16(6)	6.98	820x15	7.48	32x6(8)	10.48	1100x20	20.98
650x15	5.98	710x15	6.09	32x6(10)	12.48	1100x22	21.98
670x16	6.18	550x18	5.98	750x20(8)	12.98	1100x24	23.98

PENNA'S LARGEST STOCK — PENNA'S LARGEST STOCK

MILITARY SPECIAL

AA Guaranteed 12 Months—
900x16 10.69 | 900x20 19.98
750x20 10.98 | 1100x20 21.98

AAA GUARANTEED 18 MONTHS
900x16 14.98 • 750x20 16.48

New Tread Guar. 24 Mos.

600x16	9.98
600x16 (6)	10.98
700x15 (6)	16.95
750x20 (8)	25.98

Largest stock of used tires in the East. Thousands of satisfied customers. Write for sizes not listed.
MONEY ORDER OR CHECK WITH ORDER. NO C.O.D.'s

PYRAMID TIRE CO.
1333-35 North 5th St.
Dept. S., Phila. 22, Pa.

Tool and Die Design Training

$8,000 to $15,000 YEARLY INCOME!

Learn at home and increase your income. $15,000 yearly not unusual for Acme-trained Tool and Die Designers! Learn quickly by easy home study. No art ability required. Acme graduates go farther faster in Tool and Die Designing. Famous *Cope Correspondence System* includes same methods and texts used by our resident schools.

Placement Service as soon as you are qualified!
Write today for free literature

ACME SCHOOL OF DIE DESIGN
(Correspondence Division, Dept. S)
8 N. JEFFERSON ST. DAYTON 2, OHIO

WAR SURPLUS BARGAINS

Over 200 terrific ALSO FACTORY SURPLUS VALUES!

SEND FOR FREE catalog

SIOUX FALLS SURPLUS STORE
SIOUX FALLS, S.DAK.

Catalog OF 3000 Novelties 10c

Send 10c for amazing catalog of novelties, live animals, scientific supplies, hobbies, funmakers, planes & boats, looms, magic tricks, joke articles, unusual seeds, gadget timesavers, cameras, optical goods, projectors, movies, lucky jewelry, religious novelties, disguises, musical instruments, stamps, coins, puzzles, fortune tellers, radios, auto & bike accessories, telescopes, magnifiers, compasses, banks, smokers' gadgets, artists' supplies, printing sets, engines, motors, shockers, knives, billfolds, fireworks, guns, rifles, sports, books, games, plants, etc. Send name, address & 10c to:

JOHNSON SMITH & CO., Dept. 548 Detroit 7, Michigan

IT'S NEW! POWER WITH Neo-Dyne

- SUPER POWER—MORE MILEAGE
- QUICKER STOP & GO GET-AWAY
- CUTS ENGINE REPAIR BILLS
- GUARANTEED NOT HARMFUL TO MOTOR

A time-tested product—14 years of research. Only 1 oz. needed to blend 5 gallons of gasoline. **SEND 50c IN COIN FOR TRIAL SIZE — POSTPAID** . . . to Neo-Dyne Sales Division, Post Office Box 623, Synthol Research and Development Laboratories, Sacramento, California.

"ONCE YOU TRY IT - YOU'LL ALWAYS BUY IT"

FREE CRAFT CATALOG

120 PAGES... Craft Supplies, Tools, Designs, Instruction Books from America's Largest, Most Complete Handcraft Stock.

Send for your free copy NOW!

GRIFFIN CRAFT SUPPLIES
5626-B Telegraph Ave. • Oakland 9, Calif.

CALIFORNIA LAND!

The surge of population westward gave California 50% population increase in the past 10 years. This makes land values soar. We search out land you may acquire with small steady payments; as little as $50 down. Many say: "Better than money in the bank!" Our free pamphlet may be your future fortune. Write for it today!

Farm and Ranch Service Co.
7075 Hollywood Blvd. Los Angeles 28, Calif.

Copyrighted material

FREE!

COURSE of INSTRUCTIONS

SOME OF THE BOOKS AND LESSONS WAITING FOR YOU!

Yes, we'll teach you at home how to make the most beautiful things you have ever seen! Everything from novelties, gadgets, beautiful jewelry, gems, machine parts, lures, models . . . ALL without tools or machinery! The PLASTICAST PROCESS is as *easy as pouring water out of a glass!* Learn how to MANUFACTURE countless useful and attractive things with Liquid Plastics, Liquid Marble, Liquid Ivory, Liquid Glass, Liquid Clay, Plaster, Stone, Wood, Metal and Compositions . . . all taught to you FREE!

SUCCESS GUARANTEED

The ONLY limitation is your imagination! No special talent, no previous experience, no special tools or machinery required! We not only TEACH you how to make these things but we show you how easy it is to dispose of your production, even selling part or all of your output to us! We will actually PUT YOU IN BUSINESS OVERNIGHT AND GUARANTEE YOUR SUCCESS! Yes, we'll set you up in the most fascinating business you ever dreamed of! In just a short time you'll be manufacturing sensational products of endless variety... it's all very fascinating and simple!

HOW TO START

Just send 25c for our big 56 page catalog which elaborates on the PLASTICAST PROCESS; we will include your first book of instructions PLUS complete details of the most amazing offer that will ever come your way! Do it today...don't delay anything that can be so important to your future!

IN BUSINESS OVERNIGHT! SUCCESS GUARANTEED!

Illustrated at the left are just a few of the THOUSANDS of useful and attractive things we teach you how to make without any tools or machinery . . . simply by CASTING!

You can start your own HOBBY AND NOVELTY SHOP in your own community. We will actually put you in business, supply you with ALL the merchandise you need and GUARANTEE YOUR SUCCESS!

Or you can start your own PLASTICS FACTORY and manufacture an ENDLESS VARIETY of beautiful and useful things for others to sell! Either way, we supply all the materials and instructions!

Send 25c for Full Particulars and Big Catalog!

We have THOUSANDS of unusual products and materials of immense interest and value to inventors, mold, die, tool and model makers, hobbyists, craftsmen and to every ambitious individual seeking to create wealth and security with his own two hands in a FASCINATING ENTERPRISE!

PLASTICAST CO.

WRITE TO NEAREST OFFICE

Dept. A
P.O. BOX 6737, CHICAGO 80, ILL.
P.O. BOX 987, PALO ALTO, CALIF.
CANADIAN READERS: Please send 35c to: Canadian Ind. Plastics, 1056½ W. Pender St., Vancouver, B. C.

YOU CAN BUILD THESE HIGHWAY PIONEERS IN MINIATURE

WITH OUR NEW QUICK-CONSTRUCTION KITS . . . AUTHENTIC AND COMPLETE IN EVERY DETAIL

1910 Model "T" FORD

Join in the fun . . . building and collecting miniature antique autos is now America's fastest growing hobby! You can easily assemble these memory-stirring souvenirs of earlier days in a short time, with no sanding, carving or shaping necessary. Each Highway Pioneer is a faithful replica. Complete instructions with every order.

3/8" SCALE—IN 5 DIFFERENT MODELS

- 1910 Model "T" Ford
- 1900 Packard Roadster
- 1909 Stanley Steamer
- 1903 Model "A" Ford
- 1903 Cadillac Touring

These Models $1.00 each

All Five Models for Only $4.75

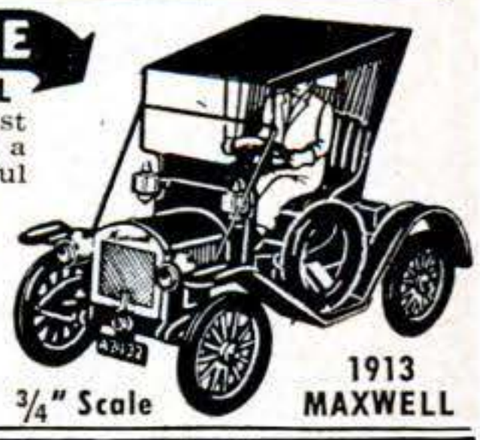
Metal and Plastic Parts Combined in Big 3/4" Scale

- 1913 Maxwell
- 1917 Ford Coupe

These Models $2.75 each

With All Orders Be Sure To Add 25c For Packing & Postage

POSTAL HOBBY MART Dept. M1, Hazleton, Pa.



3/4" Scale 1913 MAXWELL

BIG PAY, BIG FUTURE IN NEON SIGNS—SCIENTIFIC GLASS BLOWING

- **Neon Signs**
- **Industrial Glass Blowing**
- **Radio & Television Servicing**
- **Electrical Equipment Servicing**

Neon Sign making is a big, fast growing industry. Prepare quickly in our modern, well equipped shops for high paying jobs. Scientific Glass Blowing offers exceptionally fine opportunities in Electronic industry, manufacturing of Laboratory Apparatus, Atomic Energy Commission, Television Industry. **Low Monthly Payments or Pay After Graduation Plan.** Approved for Veterans. **WE HELP PLACE YOU ON GOOD JOBS.** Write for free Facts today.

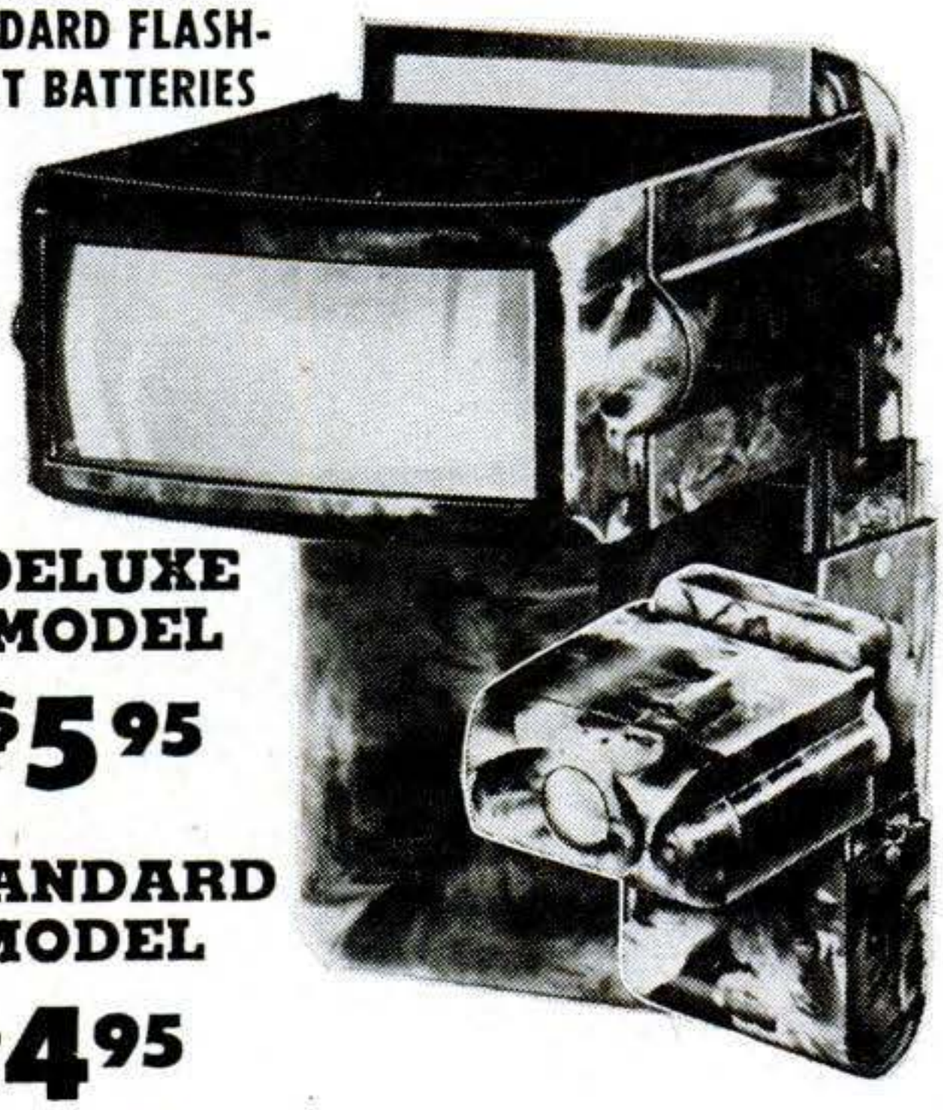
PRACTICAL TRADES INSTITUTE, Dept. PS-9 — 2550 Indiana Ave., Chicago 16, Ill.

Copyrighted material

ARCADIA ELECTRIC POCKET *Viewers*

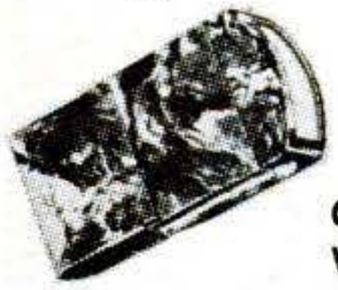
FOR 2x2 SLIDES BANTAM & STRIP FILM

POWERED BY STANDARD FLASH-LIGHT BATTERIES



DELUXE MODEL $5.95

STANDARD MODEL $4.95



FOLDS TO FIT POCKET OR PURSE

• *IF YOUR DEALER CAN'T SUPPLY YOU WRITE DIRECT—*

ARCADIA MANUFACTURING CO.
2646 WEST NORTH AVENUE
CHICAGO, ILLINOIS

ENGINEERING DEGREE IN 27 MONTHS

Big Demand for Graduates

AERONAUTICAL, CHEMICAL, CIVIL, ELECTRICAL, MECHANICAL and RADIO ENGINEERING (inc. TV and Electronics).

Hundreds of young men are earning **B.S. ENGINEERING DEGREES** annually in this recognized institution—year around operation. New terms start quarterly. Many students earn a major part of their college expenses in this large industrial center.

Low tuition. Competent instruction. Thorough, intense, practical program. Modern, well-equipped laboratories including new physics laboratory and modern wind tunnel. Individualized instruction emphasized.

Gov't approved for G.I.'s. Engineering preparatory courses. Students from 48 states and 21 foreign countries. Enter September, December, March, June. Send coupon for free catalog and full information. Enroll now.

SEND COUPON TODAY

INDIANA TECHNICAL COLLEGE
692 E. Washington Boulevard
Fort Wayne 2, Indiana

Please send me free information on B. S. Engineering degree in 27 months as checked.
☐ Aeronautical, ☐ Chemical, ☐ Civil,
☐ Electrical, ☐ Mechanical, ☐ Radio-Television.

Name.....

Address.....

MOST FAMOUS KNIFE IN HISTORY!

$3.00 postpaid

Renowned from Dieppe to the Yalu by Anglo-American fighting men of two wars, this priceless collector's item is fast becoming a legend. Named the "Fairbairn", this beautiful knife of finest Sheffield steel was made for British ordnance in England. It was issued to Commando and Ranger units exclusively. Your knife shipped in original leather sheath for belt and boot. An authentic souvenir which will increase in value from year to year. Overall 12". Brand new. Send check, cash or m. o. (For U. S., A.P.O., and F.P.O., air mail, add 80c per knife.) Dealers inquire.

Pasadena Firearms Co., Dept. 55
972 East Colorado St., Pasadena 1, Calif.

READING-MAGNIFYING EYE GLASSES BY MAIL
30 Days Trial

Write Today for Free Catalog. Send no Money
ADVANCE SPECTACLE CO., Inc.
537 South Dearborn Street, Dept. SP-9, Chicago, Illinois

Quick Car Battery Charger $9.99 P.P.

(Store price $14.95)—NEEDED BY EVERY CAR OWNER EVERYWHERE ALL YEAR AROUND! SAVES ITS COST MANY TIMES EACH YEAR! Makes starting easy in coldest weather—**No dead or damaged batteries!** 4 ampere tapering charge. CHARGES AVERAGE CAR BATTERY OVERNIGHT or a BOOSTER CHARGE in 15-30 minutes. Complete with LONG (20 ft.) 110 volt AC cord. Clips for easy connection—auto type fuse. Selenium rectifier should last for years, all metal, DURABLE, ATTRACTIVE – GUARANTEED 1 YEAR. **SEND $1.00** (cash, m.o., ck.) and pay postman $8.99 COD plus postage or send $9.99 for postpaid delivery in USA. SATISFACTION GUARANTEED (Lighter "Plug in" $1.50 extra). Available by mail ONLY from

KARPARTS CO. DEPT. CPS-9 KEARNEY, NEBR.

MAKE MONEY in Your Own ELECTROPLATING BUSINESS!

NOW, using **NEW** plating kit, it's easy to electroplate any object. Complete kit and instructions on plating metallic and non-metallic objects, with nickel, copper, silver, gold, etc., plus full data on obtaining all the business you desire and make **BIG MONEY** full or spare time. **ONLY** $4.95. **SEND NO MONEY**—everything sent **COD** plus postage—OR send $4.95 now and receive it postpaid. Money back in 7 days if not satisfied. **M. Z. NATIONAL SALES CO.,** 113-B West 42 St., N. Y. 18, N. Y.

Refinish • TOOLS SILVERWARE HOUSEHOLD ARTICLES JEWELRY BABY SHOES AUTO PARTS, ETC. • like new!

AMAZING NEW POCKET SIZE RADIO

NO TUBES, BATTERIES OR ELECTRIC "PLUG-INS" NEEDED. "TUNES IN" MOST LOCAL RADIO STATIONS with **STATIC-FREE CLEAR TONE.** Has new perma-crystal diode and **TINY SELF-CONTAINED SPEAKER PHONE**—A marvelous real tiny pocket size radio to take with you anywhere you go—**FOR REAL FUN AND ENJOYMENT. GUARANTEED TO WORK** and should last for years! **SEND $1.00** (cash, mo, ck) and pay postman $3.99 C.O.D. postage or send $4.99 for p.p. delivery. **COMPLETE** ready to play. By mail only from:

MIDWAY COMPANY
DEPT. PPS-9 KEARNEY, NEBRASKA

START A BUSINESS OR MAKE MONEY SPARE TIME

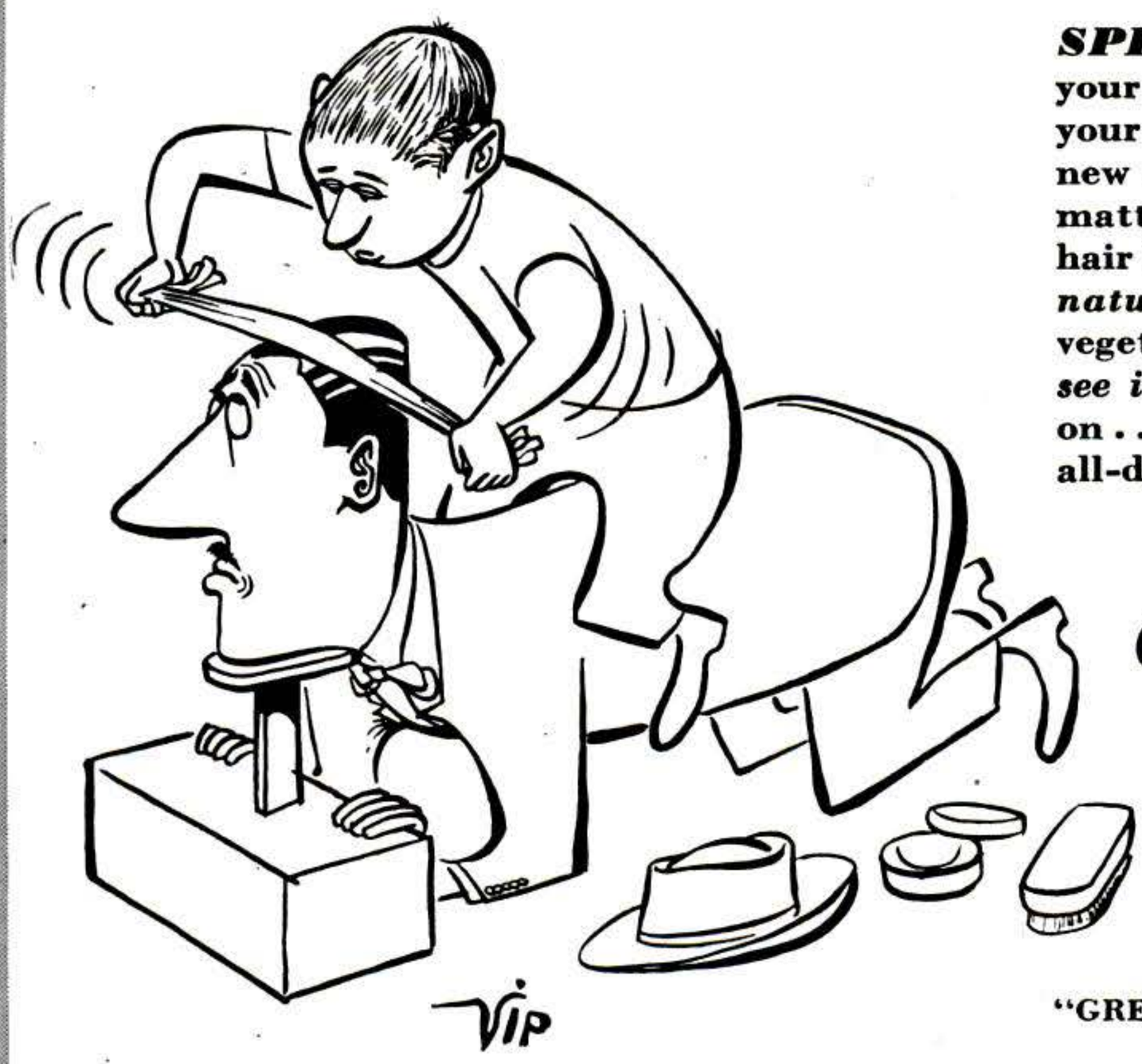
LEARN AT HOME UPHOLSTERING

Easy to learn at home—in a few months! Easy to start a shop, or earn spare-time profits! Make money as you train. Complete tool set, all materials to build ottoman, included with illustrated lessons. Low terms. *Write for valuable booklet today!*

COMMERCIAL TRADES INSTITUTE
1400 Greenleaf Ave., Chicago 26, Ill. Dept. U1-9

Copyrighted material

Vip's HAIR TYPES

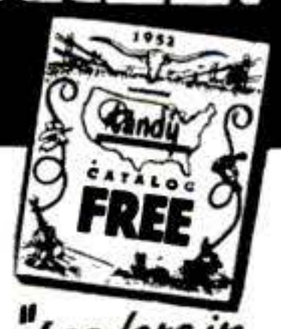


SPIT AND POLISH. **Shine your shoes . . . *not your hair!* Give your hair IDEAL care. IDEAL'S new secret agent grooms without matting or gluing . . . makes thin hair look thicker, thick hair look *naturally* neat. Not an animal, vegetable or mineral oil. *You can't see it, feel it, smell it!* Put IDEAL on . . . it's gone! All that's left is all-day grooming.**

Get New Fitch
Ideal
Hair Tonic

"GREATEST GROOMING DISCOVERY SINCE THE COMB"

Get Your Copy BIG NEW CATALOG **FREE!**



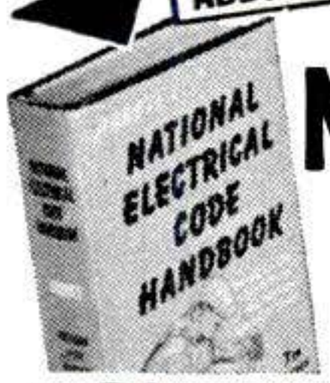
Tandy's new 64-page Instruction Book and Leathercraft Catalog. How to make 50 items, including lacing braiding, plaiting and beading. 20,000 items completely illustrated, jam-packed with BARGAINS!
FREE WRITE TODAY

"Leaders in Leathercraft"

WE SELL FOR LESS — SINCE 1919
Tandy LEATHER COMPANY
P. O. BOX 791-CT, Ft. Worth, Tex.

What Every ELECTRICIAN Must Know

ABBOTT'S **JUST OFF THE PRESS • UP TO THE MINUTE**
7th EDITION • REVISED and ENLARGED



National Electrical Code Handbook

Covers Every Wiring and Installation Job

Approved Types of Wiring • Installation Requirements for All Types of Wiring • Cable Assemblies • Outlet, Switch, and Junction Boxes • Electrical Appliances • Generators - Transformers • Grounding • Outside Wiring • Communication Systems • Elevators • Machine Tools — and MUCH MORE.

AT LAST! The *brand-new, revised* and *enlarged* book that makes it easy to do all wiring and installation jobs in accordance with the latest National Electrical Codes. Protects you against legal violations. Answers questions on materials, plans, wiring, installations.

652 big pages — crammed with 441 diagrams, sketches, drawings — which simplify, explain, and tell **how to apply** every rule. Includes special requirements for hazardous locations. Complete tables give full-load current, wire size, conduit size, and branch fuse rating of all motors. Covers motor wiring, switches, generators, appliances, cable assemblies, transformers, etc.

FREE 10-DAY EXAMINATION. Mail coupon NOW!

McGraw-Hill Book Co., Inc., Dept. PS-9-52
327 West 41st St., New York 36, N. Y.

Send the Abbott's National Electrical Code Handbook for 10-DAY FREE EXAMINATION. If not satisfied I will return it —pay nothing. Otherwise, I will keep it and send only $2 (plus small delivery charge) then—and $2 monthly for 2 months.

Name.....

Address.....

PS-9-52

City.....Zone.....State.....

Employed By.....

☐ **SAVE DELIVERY COST** — Check here if enclosing $6 WITH coupon. Then WE prepay all handling charges. Money back if you return book.

BRAND NEW

30 DAY FREE TRIAL

High Power
BINOCULARS

Finest Precision Optics
Featherlight
Money Back Guarantee
Easy Pay Plan
Leather Case Incl'd.

33 MODELS
$14.95 up

Free! **Catalog & Book**
"How to Select Binoculars"
Dealer Inquiries Invited

BUSHNELL *Binoculars*

Bushnell Bldg., Dept. P49
Pasadena 1, Calif.

FREE GUIDE **"How to Select Binoculars"**

NAME_____ CITY_____

ADDRESS_____ STATE_____

Copyrighted material

PARTS FOR MILITARY TRUCKS

For Jeep, Dodge, Chev., GMC, Studebaker, 4 Wheel Drive and 6 Wheel Drive, Write for parts catalogue giving make of Truck.

NEW POWER WINCHES

Gov't Surplus. All reconditioned like new and suitable for front or rear mounting. Tulsa, Heil, Garwood's, 12,000 to 25,000 lbs. capacity. Complete from **125.00**

WATER PUMPS

Bushing type for Chrysler Products '35 to '50 ..... **3.99**

NEW JEEP TOPS & CURTAINS

Complete top with back curtain and side curtains with snap-on doors, 5 windows. Waterproof OD Color, shipping wt. 25 lbs. FOB. K. C. Only **59.50**

NEW AXLES FOR TRAILERS

Surplus . . . H.D. axles suitable for building many types of trailers, farm wagons, etc. Standard width straight axle, 2 inch square, complete with Hubs. Timken bearings, 6 hole 750x20 or 825x20 wheels, without brakes, only **69.50**

Dual wheels. $15. extra

AUSTIN PINTLE HOOKS

For all trucks and trailers. 25,000 lbs. capacity. Shipping wt. 20 lbs. List $47.50 Our price only $20.00. Smaller pintle hook only **10.00**

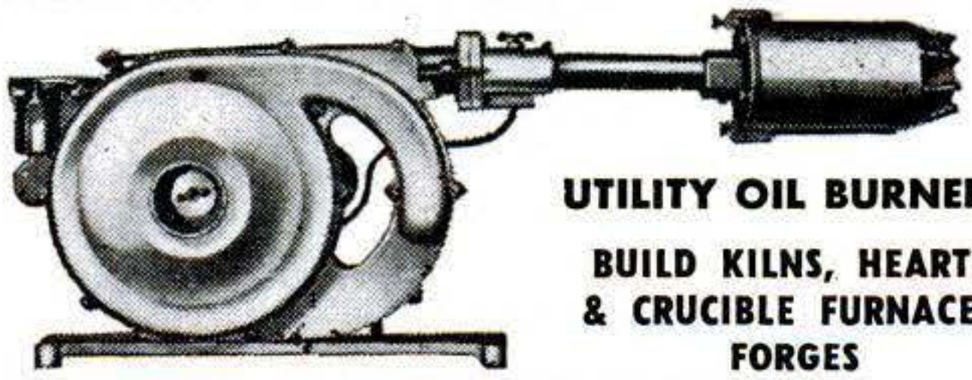
WINCH CABLE—½", 250 ft. $35.00

All prices FOB K. C. 25% dep. required on COD'S

UNITED AUTO PARTS CO., Inc.

1901 TROOST AVE. KANSAS CITY, MO.

FIRING FORGING MELTING



UTILITY OIL BURNER

BUILD KILNS, HEARTH & CRUCIBLE FURNACES, FORGES

SAVE TIME AND MONEY

Do your own FIRING, BAKING, DRYING, HARDENING, BRAZING, ASSAYING, CASTING, FORGING, GENERAL REPAIR AND PLUMBING WORK. Construction plans included. Cut costs tremendously. Burns kerosene, #1 or #2 fuel oil with a clean hot flame; fires in open or into furnace: controllable atmosphere. Up to 3000°F. A neat, compact, portable unit ready to operate. Capacity ½ to 1½ gals. per hour. Wide heat range. 26" x 10" x 9"; 22 lbs. 110 v., 60 cycles.

Write for information. Tell us your requirements. Immediate delivery. Price **$89.50** FOB factory. Satisfaction guaranteed.

STODDARD PRODUCTS CO., Inc., 66 Amity Road, New Haven 15, Conn.

LEARN TO DANCE $1.00

Why be a lonely, unpopular wall-flower?

Learn all the smart dances from the most modern to the old favorites—at home, in private without teacher, music or partner. So simple even a child can learn quickly. Tap dancing, Waltz, Collegiate, Samba, Rhumba, Jitterbug and many others, including illustrations. Complete course only $1.00. Also, delightful old square dances with illustrations for $1.00. Get each Separate or both for $1.98. If you order both take your choice of FREE-DREAM BOOK or LOVE LETTERS. C.O.D. orders 25c extra and Postage.

Superior professional taps, both toes and heels $2.98 prepaid or C.O.D. plus shipping charges. State size, large or small.

ROLLDEX, P. O. Box 516, Dept. D-85, Safety Harbor, Fla.

Stop BURNING OIL in your Car with Piston Seal

Squeeze new life into your car with Piston Seal—simply remove spark plug and insert tube. You'll note the difference in many ways—Piston Seal reduces oil consumption . . . restores compression and pick-up . . . eliminates piston slap and engine noises . . . saves money on gas and oil . . . prevents further cylinder and ring wear . . . inexpensive, guaranteed harmless, easy to use . . . good for 10,000 miles.

Write today for FREE details!

AUTOMOTIVE AIDS COMPANY

Dept. 14S, 201 E. 5th St., Plainfield, N. J.

Run the Best "Shoe Store Business" in Town!

I'll put a "Shoe Store Business" right in your hands. You don't invest a cent—make profits from $10 to $75, as much as $200 monthly in spare time. No store overhead. Exclusive comfort features build quick profits and repeat business. Sell amazing line of Air-Cushion Comfort shoes to friends, neighbors, fellow workers. Dress, sport, work, safety shoes for men, women. Send postcard today for FREE SALES OUTFIT!

CONSOLIDATED SHOE SYSTEM, Box CD-32, Chippewa Falls, Wisc.

An amazingly simple shorthand, using the regular alphabet, is explained in these four easy-to-understand lessons. Fine for school and office work. $1.50.

FINELINE CO.

303/20 Fifth Ave., N.Y.C. 16

NEW "PAINT PEN"

PAINT STRIPING TOOL

Works like a Fountain Pen

Stripes with Paint instead of Ink!

This amazing new "PAINT PEN" is a Paint Striping Tool that makes it easy to do expert striping on furniture, bikes, model planes, autos, signs, toys, linoleum, wall board, etc. Makes plain, painted walls look like tile. Paint straight, curved, circular or evenly spaced parallel lines the same way a professional painter does. Simply fill Tubular Glass Paint Fountain with any color paint and wheel tip feeds paint evenly. Tips interchangeable — jaws split apart for easy cleaning. Tool complete with tip for 1-16 inch stripe only $1.00 postpaid. Other complete tools with 1-64, 1-32, 3-64, 1-16, 5-64, 3-32, 1-8 inch tips. $1.50 ea. Extra tips, 75c each. Complete KIT with 7 tips, $5.00. C.O.D.'s postage collect. Here's the handiest tool in your whole painter's kit. Get yours today.

Paint STRAIGHT, CURVED OR PARALLEL LINES

Home Craftsmen

Just the tool you've been waiting for! New Paint Striping Tool gives "professional" results every time, yet simple and easy to use as a fountain pen. Adjustable guide keeps lines straight as an arrow. Just as easy to make curves or free hand designs. Adds new beauty and finished look to everything you paint. Send $1 now!

DEALERS
PAINT STRIPING TOOL packed in display cartons of 1 doz. Fast, profitable seller. Write for illustrated circular, discounts

Only $1.00

WENDELL MFG. CO., Dept. 2-P
4234 LINCOLN AVENUE, CHICAGO 18, ILL.

REAL LEATHER *NAVY* HELMET

NO HOOKS, TUBES OR HOLES

Brand new NAVY helmet of rich Cordovan Brown leather lined with soft warm fleece. Detachable chin strap. Ideal for flyers, cyclists, farmers, hunters. Children love them! Cost Gov't. $10.00. Small, medium, large sizes. Send cash, chk., 25% dep. plus postage on COD. Money back guarantee ..... **$2.00 pp.**

GRAND-HAWTHORNE SURPLUS
1439 S. E. Grand, Dept. PS9-52, Portland, Ore.

If Ruptured

TRY THIS!...

If you can obtain relief by holding back your rupture or ruptures in this manner—**I CAN HELP YOU!**

Write today for my valuable FREE information which is based on 23 years of practical experience.

FRED B. MILLER, Mfgr.
Dept. P, Hagerstown, Maryland.

Copyrighted material

not everyone does as well, but E. O. Lockin, who started a business of his own, reports...

for 12 months I've averaged $800 PER MONTH INCOME —most of it clear profit for me!

• Mr. Lockin expresses his grateful thanks for the opportunity to make a decent living on his own. Many men have discovered how to be independent, to be freed of bosses and layoffs—to build their own future on a steady, dependable foundation. L. A. Eagles grossed more than $200 his first week. R. E. Traynor says, "*I made $62 gross in one day.*" Others report gross from $100 per week to $12,000 per year.

How much you make depends largely on *you*. You need no special skill, no large investment to start.

No shop necessary. Our ELECTRIC RUG WASHER cleans rugs and carpets like new right on the floor ...removes dirt and grime and helps to show their natural color and beauty. So efficient and safe for carpets, it is used by largest hotels and railroads.

You take no risk. Machines fully guaranteed. Mail coupon today for complete information including how to start making big profits quickly in YOUR OWN business. BIG opportunity. Send coupon now.

VON SCHRADER MFG. CO., RACINE, WIS.

You, too, can start your own business. No special skill, no large investment required. Costs nothing to find out—no obligation. Mail coupon today for interesting FREE book.

VON SCHRADER MFG. CO.,
1931 "R" PL, Racine, Wisconsin

Send at once (no obligation) your FREE booklet containing information about your ELECTRIC RUG WASHER and how I can start *my own* permanent, profitable business.

Name_____

Address_____

City_____ Zone____ State_____

EARN BIG MONEY...

RAISE RARE *Tropical Fish*

NEW SPARE TIME HOME-BUSINESS
FOR PLEASURE AND $ $ $ PROFITS

Wonderful opportunity! No experience needed—no expensive equipment to buy. It's easy and fascinating to breed "Tetras" that LIGHT-UP like neon signs; "Gourami" that are 12 DIFFERENT COLORS; "Fighting Fish" that FIGHT UNTIL DEATH; "Rosy Tetras" that are TRANSPARENT; "Danio" that are STRIPED LIKE A ZEBRA—hundreds of fascinating rare varieties. SOME SELL FOR $50 EACH & MORE! Takes only minutes per day. WE SUPPLY EVERYTHING YOU NEED. HELP US FILL HUGE DEMAND from homes, interior decorators, clubs, hotels, pet stores, flower shops, schools, etc. Fabulous Profits! FREE Illustrated Plan & Details. RUSH name and address to:

Free HOME-BUSINESS PLAN

TROPICAL FISH INDUSTRIES BOX 4635, LOS ANGELES 24, CALIF.

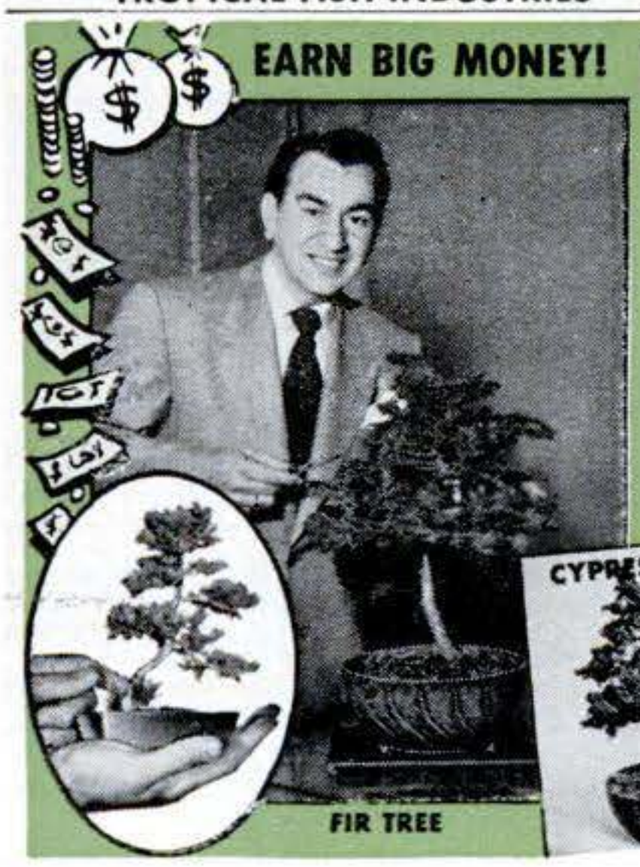
MAKE EXTRA MONEY **PLASTICS** LEARN AT HOME

There are RICH OPPORTUNITIES for MEN and WOMEN with "know-how" in Plastics. Interstate's new Plastics course tells and shows how to make hundreds of fast selling items out of Plastics. Gives complete training in fabrication, casting, lamination, molding, internal carving, etc., in simple, easy, step-by-step language and pictures. Plastics and Fabricating Kits for 23 valuable Plastic items come with training at no extra cost. START A PLASTICS BUSINESS OF YOUR OWN. No other industry holds such promise for the future. You can make big money manufacturing novelties, toys, signs, etc., in your own home in spare or full time. Don't wait! Learn NOW how Interstate's Plastics Training qualifies you for success in the Plastics field.

PLASTICS AND SUPPLIES FURNISHED FOR 23 VALUABLE PROJECTS

INTERSTATE TRAINING SERVICE
Dept. 2CJ Portland 13, Oregon

EARN BIG MONEY!



GROW "*LIVING*" MIDGET TREES!

AT HOME — SPARE TIME — NO EXPERIENCE NEEDED!

It's new! Amazing! At last, the secret of growing miniature (MING) trees can be yours. FULL GROWN, dwarf trees—only a few inches high. Beautiful miniature fir, orange, oak, Chinese elm, peach, pine, cypress—any kind! All BLOOM and even BEAR FRUIT. All perfect healthy specimens—but miniature in size! Make costly home decorations and expensive centerpieces. (SOLD FOR OVER $1,500 EACH.) Big demand. Costs only pennies—takes only minutes per week. IT'S EASY! Fun! A new fascinating hobby—a new fabulous $$$$ business. Send for free secret plan details and real seed.

HOW TO LEARN GROWING SECRETS $ BOTH FREE SEED

MAIL TODAY FOR FREE SEED AND PLAN!

HELP US FILL HUGE DEMAND

These trees are being demanded by STORES · CLUBS · HOTELS · FLORISTS · HOUSEWIVES · INTERIOR DECORATORS · COLLECTORS · HOBBYISTS—Big Money Opportunity for you.

NATIONAL NURSERY GARDENS, Dept. N9
8463 South Van Ness, Inglewood 4, California
Rush me FREE PLAN and SEED IMMEDIATELY!

Name_____

Address_____ Zone____

City_____ State_____

Copyrighted material

Get into . . .

PLASTIC LAMINATING AT HOME!

Sensational New "ONE MAN BUSINESS"
..pays $10 to $20 profit for each dollar of cost.

Make $20 to $30 a day by our MAGIC MAIL PLAN . . . get orders and cash from your mailman!

Here's the newest and most fascinating of all home-operated businesses. For the first time, a simplified machine brings the fabulous profits of Plastic Sealing and Plastic Laminating within the reach of the small operator. Can be operated in a corner of the kitchen, basement, or garage. And any man or woman, regardless of age, education, or experience—can learn this interesting work *in a few minutes of reading*—can turn out professional jobs *after one hour's practice.*

TWO EXCITING FIELDS FOR BIG PROFITS!

No house-to-house canvassing. No face-to-face selling. We not only supply the equipment you need for the work, but also show you exactly how to cash in big daily profits from two big demand fields.

A FORTUNE IN PLASTIC SEALING

Millions of people want to protect valuable cards, photographs, documents and papers against wear, soil, and damage. By our MAGIC MAIL Plan you get this business through the mails. Open envelopes and take out money and orders. Details of this plan will amaze you. It will be sent free. Just mail coupon.

ENORMOUS PROFITS IN LAMINATING

A creative, artistic business. Gift shops sell your entire output. Just a few of thousands of giftwares illustrated on this page. Beautiful colors. Endless designs. Exclusive "one of a kind" appeal brings sales at ten to twenty times the cost of materials. Beautiful illustrations and instructions for making these artistic novelties sent free.

FREE The opportunities in Plastic Laminating are so big that space here does not permit even skimming the surface. To get any idea at all of the size of these markets and your place in this sensational business you must read the details. See for yourself how easy it is to do the work—how you can put plastic sheets into your machine and take out a fortune—how money and orders come to you in the mail—how gift shops clamor to get more and more of your creations—how you can start with one machine and build up a big production plant with others doing the work—how you can get money and business from every State in the Union—how you can achieve independence without study or experience.

$5-$10-and $20 BILLS COME TO YOU IN THE MAIL

By our MAGIC MAIL Plan you sit at home, send out mail, and get back money and orders. Additional profits in supplying local people with lifetime protection for

SNAPSHOTS—IDENTIFICATION CARDS—DISCHARGE PAPERS—DRIVERS' LICENSES—SOCIAL SECURITY CARDS—VOTERS REG. CARDS—MENUS—BIRTH CERTIFICATES—CREDIT CARDS—BIRTH AND WEDDING ANNOUNCEMENTS—RAILROAD PASSES—IMPORTANT DOCUMENTS OF ALL KINDS.

Lifetime protection. See how laminating protects against wear, soiling, and moisture damage with its smooth, flexible, plastic covering on each side. LIFETIME PROTECTION needed for valuable or sentimental objects of all kinds—even a priceless whisp of hair can be laminated. Think of the countless thousands of profit items for your Laminating Press.

Thousands of Beautiful Art Creations

No one yet has been able to list the thousands of gorgeous articles that can be made by Laminating as explained in our Free Information. Just a few are

COSTUME JEWELRY—CIGARETTE BOXES—JEWEL CASES—GLOVE AND HANDKERCHIEF BOXES—CUFF LINKS—NOVELTY BUTTONS—TRAY—CANDLESTICKS—COASTERS—CLOCK CASES—LAMP BASES PICTURE FRAMES—BOOK ENDS—PAPER KNIVES—KEY CHAIN CHARMS—CHECKERS—CHESSMEN—ADVERTISING SIGNS—NAMEPLATES—BOOKMARKS—BELT BUCKLES—TIE RACKS—KEEPSAKES OF ALL KINDS.

RUSH COUPON

Never before has such an opportunity been offered the small, home-operator—an opportunity to gain complete personal independence in a big money business of your own. Don't lose a minute. Get the facts at once. All information, fully illustrated with pictures, is free. Send the coupon—or send your name on a penny postcard. There is no charge now, or at any other time. We may be limited in the number of Warner Laminators that can be made up, so don't put this off. Send for the information on this exciting opportunity today.

WARNER ELECTRIC CO.,
1512 Jarvis Dept. L-9-P, Chicago 26, Illinois

WARNER ELECTRIC CO. Dept. L-9-P
1512 Jarvis, Chicago 26, Illinois

Rush complete information with illustrations showing the things I can make and the money possibilities in Plastic Laminating. All this is free. I do not pay a penny now or at any other time. No salesman is to call. Send all facts by prepaid mail. Be sure to tell me how I get orders and money from my Postman by your MAGIC MAIL Plan.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Copyrighted material

Classified Ads only 80c per word per insertion, payable in advance. Minimum ad 10 words. To be included in November issue, copy should be in our office by September 25. No cancellations accepted after September 15.

CLASSIFIED OPPORTUNITIES

POPULAR SCIENCE MONTHLY-351 FOURTH AVE.-NEW YORK CITY 10

1 AUTOMOBILES & MIDGET CARS

"HOW to buy speed equipment without money." No selling. Information free. Newhouse Automotive Industries, Los Angeles 22.

HERE It Is! The buy of a lifetime for any Car Owner, Dealer or Mechanic! "Automobile Engineering," a huge, 4-volume set totaling 2,804 pages, compiled by 11 foremost automotive engineers, published by a famous publisher and covering all phases of car design, operation, servicing and repair! Packed with basic information, photos, diagrams, charts, this encyclopedia of car knowledge stands half a foot wide on your bookshelf. It will be your ultimate authority on clutches, brakes, pistons, axles, fuel systems, wiring diagrams, 1,001 engine kinks, plus all other parts in all leading models! This immense, 4-volume treasury of money-saving facts retails at $24.80 a set. By special publisher's agreement, Popular Science can offer you the same set at fantastic bargain price of only $9.98! Just a few sets available, so act at once. Rush only $9.98 for the best buy in books ever! Popular Science Monthly, Dept. 952-C, 353-4th Avenue, New York 10, N. Y.

BUY racing heads, dual manifolds, Hot coils, etc., without money. Information free. Newhouse Automotive Industries, Los Angeles 22.

SAVE—California Custom Accessories headquarters. Buy direct from original designers. Chrome dash panels, electric push button door-trunk conversions, fender skirts, dual mufflers, lowering kits, speed-dress up equipment, 40 page catalog. Hundreds of photos—25c. Eastern Auto, 3319D South Grand, Los Angeles 7, Calif.

WANTED to buy Custom or Antique car, any location, send full particulars. Robert Meader, 1041 Territorial, Benton Harbor, Michigan.

COLLECTORS, mechanics: Non-profit organization now offering old, new and foreign automobile literature, repair manuals, glossy photos, data books; free motor magazines. Write today; get name on free mailing list. Auto Maniacs, Inc., Stockbridge, Michigan.

"SAVE 50%"—Speed Equipment, Hollywood Mufflers, Dual Manifolds, Racing Cams, Heads, Custom Accessories—All Cars! Big Catalog and "Souping" Handbook 25c. Almquist Engineering, Milford 34Z, Pennsylvania. (Dealers Wanted).

1953 EDITION. It's new! It's different! Get world's largest Auto Accessory & Parts Catalog and save money. 100 pages. Over 50,000 items, including Hollywood Accessories, Hi-Speed Equipment, Rebuilt Engines, all parts and accessories for all cars and trucks. We have that Hard-To-Get part! Jam packed with bargains. Completely illustrated. Send 25c (refundable). J. C. Whitney, 1919-EA Archer, Chicago 16.

MAKE your own Polyester-Fiberglas Auto body. Catalog 10c. Gem-O'-Lite, Box 686P, North Hollywood, Calif.

GOT A Crosley Problem? Club bulletin reveals owner experiences, opinions. Members coast to coast. Win accessories. Tires recapped. Eye-catching windshield decal, identification card, etc. Crosley Car Owners Club, 304 N. Poplar, Charlotte, North Carolina.

POWERCAR Junior—Real Children's Auto! See details under "Motorcycles-Bicycles."

SPEED equipment from the World's largest firm. 25c for huge catalogue. Newhouse Automotive Industries, Los Angeles 22.

2 AUTO SUPPLIES & EQUIPMENT

"SPEED Equipment Wholesale!" Big Catalog 25c. Almquist Engineering, Milford 39Z, Pennsylvania.

1953 EDITION. It's New! It's Different! Get world's largest Auto Accessory & Parts Catalog and save money. 100 pages. Over 50,000 items, including Hollywood Accessories, Hi-Speed Equipment, Rebuilt Engines, all parts and accessories for all cars and trucks. We have that Hard-To-Get part! Jam packed with bargains. Completely illustrated. Send 25c (refundable). J. C. Whitney, 1919-T Archer, Chicago 16.

NEW and used guaranteed parts for civilian and Army cars and trucks. Largest stock in America. Mail orders. Pioneer Auto & Truck Parts Company, 788 W. 13th Avenue, Denver, Colorado.

BRUSH Plating Outfits connect to a battery. No tanks or shop required. Free particulars. Gunmetal Co., Ave. K, Decatur, Illinois.

GM71 Discarded injector parts wanted. Hogen, 7120 Carnegie, Cleveland, Ohio.

INCREASE! Gasoline mileage Three to Five more miles per gallon. Guaranteed Gasoline Vaporizer, also Increases Power. Easier starting. $3.50. Turb-O-Vane, Stockton, Calif.

PATENTED, a better motor for $3.00, free details. Ferns Products, 8120-D Walnut Dr., Los Angeles 1, Calif.

BIG! New! Power, Speed, Hot Rod Catalog. Jam Packed with Custom Conversions Tools. Charts, Speed Equipment for all cars. Send $1.00 Today. Zimmer Company, Box 4, Encino, California.

ELECTROPLATING Outfit $3.00. Instruction 10c. Solar, Box 263, Detroit 2, Michigan.

NEVER Change Your Oil! Full details free. Thousands of users. You'll be amazed! Dept. TH, Henderize, Inc., 5667 Freeport Blvd., Sacramento, California.

"WATER Injection". Airflow Needles. Economy methods. Free illustrated information. Neher Industries, LaVerne, Calif.

CHEVROLET Owners: Stop tappet noise with Kaye Tappet Silencers. Quality product. Easy to install. Money back guarantee. Complete set $5.95 Postpaid. Kaye Products, 1321C So. Layton Blvd., Milwaukee 15, Wisconsin.

GIVE your ignition system a break! Eliminate power killing battery corrosion with Protex Battery Protectors. Amazing new development. Not a gadget. Simple installation. Guaranteed. $1.00 complete. Carter-Bingham, Seaside, Waterford, Conn.

FORD, Mercury, Studebaker, Chevrolet Catalog 25c. Weiand Power Racing Equipment, 2733 San Fernando Road, Los Angeles 65, California.

BEARINGS—Automotive—Tractor—40% Off List Prices. Tell us your needs in ball or roller bearings. Standard brands—factory new—for replacement in Ford, GMC, Chrysler cars and trucks, and all makes tractors. Westfield Company, 509 Fifth Ave., New York 17, New York.

ILLUMINATE your powerglide or dynaflow dial, information free. Gaiser, Box 25B, Kokomo, Indiana.

MOTORIST save gasoline by Vacu-mating overrich mixtures. Fits all cars. For Free particulars write Vacumatic, Dept. 1937, Wauwatosa, Wisconsin.

WOLF Whistle auto horn, precision constructed, no holes to drill, fits any gasoline engine, $3.00 prepaid. Charter Oak, 256B 145 Ave., St. Petersburg 6, Florida.

3 AUTO TRAILERS

BUILD your own trailer! Plans for all kinds. Illustrated catalog 10c. Jim Dandy, 125-S, Wausau, Wisconsin.

4 MOTORCYCLES, BICYCLES AND SUPPLIES

POWERCAR Junior—Real Children's Electric Auto . . . Plenty of power for hills, towing wagons, etc. Catalog free. Mystic River Sales, Dept. Q-9, Mystic, Conn.

SERVICYCLE $15, Midget car $10, Dart motorscooter $17, less engines; Two cylinder opposed 5 horsepower engine $20, others $7.50 up. (Mail order only). Send 25c for catalogue number 47, listing these and hundreds of other bargains in midget cars, motorscooters, outboard motors, homebuilders parts, plans, etc. (35c by First Class Mail). Midget Motors Directory, Athens, Ohio.

RECONDITIONED motorcycles and motors. Chromium accessories. Complete stock Indian parts. Expert rebuilding. Fast service. Indian Motorcycle Sales, Kansas City 1, Mo.

HOT Rod Tail Pipe makes bikes sound like real motor! Send $3.00 cash or money order. Money back guarantee. Hot Rod, 210 West 7th, Los Angeles 14.

WHIZZERS $20; Midget car $15; Motorscooter belt drive $6; 3-wheel scooter car $39.50. Send 25c (35c first class mail) for catalog #21 jammed with sensational bargains in wheels, motors, clutches, motorscooters, midget cars, motorbikes, etc. Gail, 538 Erie, Toledo, Ohio.

WHIZZER $20; Servicycle (good tires) $20; Motorbike conversion kit $25; Cushman motorscooter $25; Harley twin $25. Rush 25c (35c first class mail) for catalog #952 listing many other amazing bargains in motors, midget cars, motorscooters, motorbikes, etc. Associated, Box 1764-CS, Toledo, Ohio.

5 AVIATION

AVIATION Quiz—All phases of aviation in 1001 questions and answers. $1.00. Aero Data, Box 905, Sea Cliff, New York.

LOUDSPEAKER equipped Airplanes for sale or lease. Gerow, 2328 El Cajon Blvd., San Diego, Calif.

6 BATTERIES, GENERATORS, ETC.

EDISON Nickle odorless storage batteries. 12 to 600 ampere hour. Any voltage. Long guarantee. Literature. Hawley Smith Co., Croton Falls 2, New York.

7 ELECTRICAL SUPPLIES & EQUIPMENT

LAMPS—25c brings bargain parts catalog containing instructions for electrifying oil lamps, vases, etc. Gyro Lamps, 5402B Clark, Chicago 40.

FREE—War Surplus Catalog—We sell for Less. Prices slashed on Welders, Motors, Generators, Hydraulics, Pumps. See ours First. LeJay Company, Minneapolis, Minnesota.

LAMP Supplies — Wholesale — any amounts. Prompt shipment on all parts for repairing and building lamps. Illustrated catalog 15c. Brown Lamp Co., No. 501, Wellston Sta., St. Louis 12, Missouri.

ELECTRIC Pencil—Writes, engraves all metals. $2.95. Reb Industries, 265-EB, Elmhurst, Illinois.

FOR Sale: Quantity, New, 6 Ampere Vane Type DC Ammeters. $1 each; 3 for $2, prepaid. Strickland Electric Co., 1427P E. 18th Ave., Columbus, Ohio.

8 WELDING, SOLDERING

VOLCANO Gas Torch for light Silver brazing, soldering and many other uses, needs no compressed air, used with natural manufactured propane and butane gases, send for folder. Miller Metal Products, Box 4026, Roanoke, Virginia. $3.50 Guaranteed.

A.C. Welders, Four Sizes, Lowest Prices. Free literature. Holgerson's Service, Canton, Kansas.

9 MACHINERY, TOOL SUPPLIES, ETC.

INDEX Heads for the lathe, drill-press, milling machine etc. Very reasonable. Write for free folder. Long's Index Heads, 2117 East B Street, Torrington, Wyoming.

Copyrighted material

MACHINE Shop Men and Handy Men! Save over 60% on the most authoritative set of home-instruction books ever published anywhere on machine shop practice . . . The Modern Shop Practice Library. The famous publishers issued this magnificent 8-Volume set for which thousands eagerly paid $34.80! Now Popular Science makes the very same library yours for only $11.98! Contains world's most complete coverage of machine shop knowledge. Over 4,000 pages of vital information, 3,848 detailed illustrations, plus 167 tables! Written simply, clearly by 41 of nation's top-ranking experts. All you need to know about tool making, pattern making, foundry work, forging, mechanical drawing, blueprint reading, and hundreds of other skills. Each skill worth the price of the set alone! Each volume indexed. Beautiful, lifetime bindings. Never before in U. S. history has there been such a need for skilled machine shop men. You can make more money by claiming Your complete 14 lb. 'Modern Shop Practice Library" now! You run no risk . . . money back if not fully delighted. Remember, you pay—not the $34.80 paid by thousands of satisfied men, but the low price of just $11.98. Send remittance and order Today to Dept. 952-C, Popular Science, 353-4th Ave., New York 10, N. Y.

POWER tools, equipment wholesale prices. Free bulletin. Homecrafters Cooperative, Grand Rapids 6, Michigan.

GOOD machines for your shop, low prices, immediate delivery. New 10" Screw-cutting bench lathes—$250; Vertical milling attachment with motor—$150; Used 20"x10' screw cutting lathe—$640; 21"x10' Quick change—$1480. Horizontal milling machine, table 10"x44, automatic feeds—$820. 14" Shaper—$290; 20" heavy duty $780. 5' Radial drill #4 Taper with motor $840; Small turret lathe $250. Money back guarantee. Conversion Parts Company, 277 Adams St., Boston 22, Mass.

POCKET Size (2¾x4½) Gage accurately measures all Pipe, Conduit, Metallic Tubing from ⅛" to 12". Carrying case and instructions included, only $3.00. Merit Sales, 4225 Eldone, Baltimore 29, Maryland.

10 ENGINES, MOTORS, ETC.

EARN Big Money! Become an expert in Diesel Engineering. Think of it, you can now claim The Complete Diesel Engineering Library through a special Popular Science offer that knocks off 62% of the original cost! Thousands eagerly paid $29.80 for this magnificent 6-Volume Set, the most complete library of its kind. You get it for only $9.98! Over 30 Diesel experts and top-ranking technicians pooled their high-paid knowledge and experience to create the world's most exhaustive library on Diesel engineering. Here's your complete treasury of fact and illustration on the Construction, Operation and Maintenance of Heavy-Duty and High-Speed Diesel Engines. You get all allied instruction in amazingly easy-to-follow style . . . practical mathematics, slide rule, principles of electricity, construction, operation and maintenance of motors, Diesel electric plants, mechanical and electrical equipment for Diesel locomotives; thermodynamics, theory and design of Diesel engines and a great deal more. Profusely illustrated, jammed with tables, charts, show-how diagrams. Each volume sturdily bound, fully indexed. Start up the road to higher earnings Today. Claim your Diesel Engineering Library Today, remit not $29.80, but only $9.98 to Dept. 952, Popular Science, 353-4th Avenue, New York 10, N. Y.

WINDING Data, listing 225 motors, single and three phase $1.00. Motor Data, Box 7631, Kansas City 3, Mo.

MOTORS ½ horse $15.00, ¾ $22.00, 1 $35.00 A.C. generators 750 watt $38.50, 3000 watt $125. Butler, 1885 Milwaukee, Chicago 47.

GEARHEAD Motors ⅓ H.P. Standard Motors with six output shaft speeds, the motor of 1,000 uses. Write for literature. Vine, Hill & Co., Box 35P, Swanton, Ohio.

11 BOATS, OUTBOARD MOTORS

FULL size, cut to shape boat patterns, blueprints, 7½-38 feet. Illustrated "Build a Boat" catalog 25c (coin). "How to Build Boats" book, $1.00. Cleveland Boat Blueprint Co., Dept. A-77, Cleveland 13, Ohio.

NEW, used, rebuilt marine motors. Marine conversions, fittings. Free Catalog. Stokes Marine Supply, Dept. 23, Coldwater, Mich.

OUTBOARD Motor Parts—New—Used for all makes. Send stamp for price quotation, listing parts needed. Outboard Motor Mart, Inc., 229D State Street, Boston, Massachusetts.

CONVERT Fords and Jeep to 100% marine engines with Osco's world famous Convo-Kits. Deluxe catalogue 25c (coin). Oscomotors, 3627F Lawrence, Philadelphia 40, Penna.

CURE that leaking boat with Fiberglas-Plastic covering. Ends caulking and painting. Nationally approved process. Easily applied, complete instructions. Industrial Plastics, 3807 Harrison Street, Oakland 11, California.

OUTBOARDS—Complete plans all types. Racing, sporting, fishing. Circular 25c. E. G. McCrea, Designer, Box 141-E, North Hatley, P.Q., Canada.

APPLY Polyester-Fiberglas coating to your boat. Permanent protection. Catalog 10c. Gem-O'-Lite, Box 686-O, North Hollywood, Calif.

PLANS: Inboard-outboard runabouts, cruisers, sail. Wood, plywood, welded steel. Advise requirements. John B. Clark, N.A., 329 Kenmore, Bay Village, Ohio.

12 BODY-BUILDING COURSES JIU JITSU & ATHLETIC EQUIPMENT

TWO Sensational Books "Police Jui Jitsu", "Scientific Boxing". Everything $1.00. Turner Company, 1170-A1 Broadway, New York 1.

GAIN Weight! 4 exercises will increase weight. Complete $1.00. Body Builders, 36 Nevada Street, Winthrop 52, Mass.

100 TRICK Knockouts for self defense. $1. 1c each. Lincoln, 529 Main, Evanston 2, Illinois.

BARBELLS, Dumbbells, Exercise equipment. Courses. Free booklet. Good Barbell Co., Reading, Penna.

14 FIELD GLASSES, TELESCOPES

REFLECTOR telescope Kits: Aluminized Mirror, Diagonal, Eyepieces, Mounts. Complete Kit. Free Bulletin. Esco, 911 Willow Ave., Hoboken, New Jersey.

GIANT, 100 power astronomical telescope with 6 ft. tripod (10,000 area magnification) Clear Vision full power guaranteed. $15.00 F. O. B. factory. Suffolk Science Services, Dept. TC, Riverhead, N. Y.

WAR Surplus Bargains. Binoculars, Telescopes, Sextants, Millions of Lenses, Prisms, Reticles, Eyepieces, Objectives, etc. Mail 10c for Big "Catalog CN." Send $1.00 for Stock CN-10-piece Lens Kit and Big Instruction Booklet. Edmund Scientific Corp., Barrington, New Jersey.

BINOCULARS, telescopes, microscopes. Our 20th year of leadership in optical values. Bargain catalog free. Brownscope Co., 24 West 45th St., New York.

"FREE" Catalogue! Thousand war surplus optical bargains. Lenses, Prisms, Telescopes, Binoculars, etc. Send $1.00 for 10 Lens Hobbyist Set and Project booklet. G. Jaegers, 691 West Merrick Road, Lynbrook, New York.

TERRIFIC Values. Binoculars, Telescopes, Microscopes $3.95 up. Request Free Money saving Catalog. Criterion, Hartford, Conn. Dept. S6.

BUILD Your Own Microscope—200 power. Complete Castings, Mounts, Lenses, Screws Instructions—Kit $17.50. Free Illustrations. Esco, 911 Willow Ave., Hoboken, New Jersey.

REFLECTING Telescopes, completely assembled, 60X, $29.75. Guaranteed Observatory clearness. Free information. Skyscope, 475 Fifth Avenue, New York 17.

BINOCULAR Specialists, all makes repaired. Authorized Zeiss, Hensoldt dealer. Tele-Optics, 5514 Lawrence, Chicago 30, Ill.

SAVE: Free 36 page, 3 color binocular catalog. 60 different models. United Binoculars, (A-6516), 9043 S. Western, Chicago 20.

SAVE! Save! New Binoculars! Free Catalog. Free Book, "How To Select Binoculars". Write Today! Bushnell's, 43-P39 Green, Pasadena 1, Calif.

FREE illustrated Binocular Buyers Guide—inside facts about World Famous Models. How to Buy Direct. F-E Binocular Buyers Guide, Dept. 2, 2251 W. Pico Blvd., Los Angeles 6, Calif.

POWERFUL astronomical telescopes easily made. Perfect lenses and instructions; 100x $3.00; 100x and 200x $4.00; 100x, 200x and 400x $6.00. Full power, clear vision guaranteed. Instructions alone 10c. Suffolk Science Service, Riverhead, N. Y.

AMAZING prices, brand new precision binoculars, $16.00 up. Free trial. Folder "Binocular Selecting," pricelist free. Prentiss Importers, Mercury Bldg., West Los Angeles 25, Calif.

MICROSCOPE Sale . . . Zeiss disecting, German Laboratory, Reichert Spencer, Rasmussen-Reece, Amsterdam, New York.

POWERFUL telescopes easily made. Lenses, erector, focusing tube, instructions for making 400X telescope $5.00. Complete telescope with tripod brings objects 13 times closer, 150 times larger $7.00. Telescopic Cameras, Manorville 5, New York.

15 SPORTING GOODS, GUNS, FISHING TACKLE, ARCHERY, TRAPPING

120 PROFUSELY illustrated pages, antique pistols, swords, daggers, armor, etc. 50c. Robert Abels, PS860 Lexington Ave., New York 21.

SAVE on Gunsmithing, Jap Conversions, Scopes, Loading Tools. Catalog 10c. Cougar Arms Company, 587 Ferris Street, NW, Grand Rapids, Michigan.

5,000 BARGAINS, firearms, binoculars, war relics, catalog 50c. Smith Museum, Runnemede, N. J.

WESTERN guns, Colt's, Winchester 73's, Kentuckies, Hunting guns. Antique-Modern gun list 25c. Ed Agramonte, 201 Warburton Ave., Yonkers 2A, New York.

FISHERMEN—make your own sinkers with our molds. Free illustrated booklet. Reading Instrument Co., Box 78, Reading, Penna.

OVER 500 guns, modern, obsolete. List 10c coin. Ed Howe, 26 Main, Coopers Mills, Maine.

SEND 10c for lists either shotguns, rifles, handguns, ammunition or send 25c for all lists. Frayseth's, Willmar, Minnesota.

16 CAMPING EQUIPMENT & TENTS

TENTS, canvas; direct from manufacturer. Also war surplus. Camping equipment, sleeping bags. Tremendous selections. Free catalogue. Low prices. Morsan Sales, Dept. PS-7, 10—15G 50th Avenue, Long Island City 1, New York.

17 DOGS, BIRDS, HAMSTERS, RABBITS & PETS

EARN Up To $400 Monthly Raising Angora or New Zealand Rabbits. Plenty markets. Particulars free. White's Rabbitry, Newark, Ohio.

MAKE Big Money! Raise Chinchilla Rabbits. Cash Markets Supplied. Write Today! Rockhill Ranch, Sellersville 16, Pa.

RABBIT raising pays. Illustrated Literature Tells How. Old Mill Rabbit Farm, Elmhurst 4, Illinois.

NATURALIST'S Catalog 10c. Chameleon 55c. 35 Mexican jumping beans $1.00. 200 Mealworms $1.00. Alligator $3.65. Quivira Specialties, Topeka 10, Kansas.

RAISE Mink: Free booklet, pen. plans, inside "secrets" feed care. Mink are money makers. Investigate today. Lawrence Molgard, Brigham City 13, Utah.

RAISE Guinea Pigs. Amazing profits. Free booklet. Taylors, B426B, Hapeville, Georgia.

AMERICA'S Largest Breed of Rabbits Tops for meat and highest fur prices, information free. Texas State Rabbitry, Friendswood, Texas.

SALE, Tame Red Squirrels also Striped. Dewey H. Balch, Castleton, Vermont.

PANDA hamsters, the spotted kind, pets and breeders also Syrian Golden. Fred Battersby, 430 N Fourth Street, Vineland, New Jersey.

18 FROG RAISING

JUMBO Frog Raising Profitable Information 10c. Vol Brashears, Berryville, Ark.

19 FARMS, OTHER REAL ESTATE

LAND from $4.50 an Acre. Missouri—Oklahoma. Free list; maps. Large or small tracts. Payments. John Calvert, Box 939, Winter Haven, Florida.

Copyrighted material

FARM Ranch Opportunities. favorable conditions. Washington. Minnesota. Montana. Idaho. Oregon. North Dakota. Literature. farm descriptions. specify which state. J. W. Haw. 120 Northern Pacific Railway. St. Paul. Minnesota.

SEE Houston Grow. Now is the time for You to buy a fine. big Tract near Houston. Texas. the fastest growing city in U.S. for only $195. payable $10 cash and $10 monthly. Insured title. taxes One Dollar yearly. Great Oil Producing. Refining and Chemical Center. Fine profits being made by many. These Tracts located near two paved highways. electricity. schools. bus service. etc. Write today for Maps. Pictures and full information. Free. Baker Wood. Owner Box 6223. Houston 6. Texas.

CALIFORNIA ranch lands. Seized and sold for taxes. 50c to $5 acre minimum bid. 10c brings illustrated land catalog. Outline maps. Tax Land Sales. Box 2350BX. Hollywood 28. Calif.

NEW Strout Catalog Just Out! Farms. Homes. Businesses. 31 States. Coast-to-Coast. bargains galore. Mailed Free. Our 53rd year. World's Largest. Strout Realty. 255-ZB 4th Ave.. New York 10. N. Y.

20 TREES, SHRUBS, ROOTS, HERBS

CORSAGE Materials. Flower Arrangers' Supplies. House Plant Helps. Artificial Flower Parts. Free Catalog. Floral Art. Dept. PSJ. Teaneck. New Jersey.

FRUIT Trees! Stark Bro's sensational new "Dwarfs". Also standard size. exclusive patented. trade-marked varieties produce abundant. larger. better apples. peaches. pears. All fruit faster growing. quicker bearing. Also beautiful ornamental trees and shrubs. Get giant new Color-photo Catalog Free. Stark Bro's.. Dept. 30093. Louisiana. Missouri.

21 POULTRY & SUPPLIES

RAISE pheasants on the $100 week plan. Little capital and space can make you independent. Free details. Great Central Game Management System. Columbus 6.

22 PROFITABLE OCCUPATIONS

$4 TO $10 Hour Spare-time in billion-dollar Adjustment field. Qualify Now! Write today. Universal Schools. S-5. Box 8202. Dallas 5. Texas.

FOR as little as $8.00 you can put your ad here in the November issue. Get in on the winter season mail-order rush and deliver your sales talk direct to the 4.000.000 readers of Popular Science. Same low rate you've always paid—80c a word. The November issue closes on September 25th! Write today for order blank and free booklet. "How To Make Money Out of Classified Advertising." O. K. Kelly. Classified Advertising Manager. Popular Science Monthly. Dept. B. 353 Fourth Avenue. New York 10. New York.

DETECTIVES Earn Big Money. Excellent opportunity. Detective Particulars free. Write. Wagoner. P-125 West 86th. New York 24.

BE independent. be secure. have your own profitable business—earn $20.00 and more a day making beautiful. fast-selling lamps at home. No equipment needed. Illustrated course teaches you quickly. Course, parts catalog, wholesale price list —only $2. Gearon Co.. Dept. 200-A9. 27 S. Desplaines. Chicago 6. Ill.

$40.00 WEEKLY. Made growing mushrooms. Fresh. Dried. Dominion Patent 331.583. free spawn. North American. 169Y Yonge. Toronto. Canada.

WANT A Diesel Job? New Opportunities to increase income. Higher Pay. More Money. We can help you Qualify. Tools. Shop method home training. Write today! Diesel. Tractor. Heavy Equipment Division. Interstate Training Service. Dept. 2J. Portland 13. Oregon.

"HOW to Make Money With Home Workshop" describes amazing methods used by hundreds of successful craftsmen. Tells what to make. How to sell workshop output spare time. Write at once for details. Craftsman. 115B9. Worth Street. New York City.

$10.800 PROFITS! Your own Mailorder Business! No Capital Risk! "Success Plan" (worth $2) Free! Write today! Treasury. 149 Storer. New Rochelle P-3. New York.

$5000 FROM half acre growing Ginseng. crop bought. Particulars 10c. Associated Growers. Sperling. Manitoba.

RAISE fishworms. easy. profitable. complete instructions 25c. Huffman's. Rives Junction. Michigan.

GROW Mushrooms. Cellar. shed. and outdoors. Spare. full time. year round. We pay $3.50 Lb. We paid Babbitt $4.165 in few weeks. Free Book. Washington Mushroom Ind.. Dept. 101. 2954 Admiral Way. Seattle. Wash.

SEVERAL Mailorder Moneymaking Homework offers. W. W. Jenkins. Lucasville. Ohio.

FOREIGN Jobs. Construction projects underway and soon starting in Africa. South America. Canada. England. Europe. South Pacific. Middle East. Mexico and Alaska. Send $1.00 for foreign job news. information. application forms. etc. DCS Foreign Job News. Dept. 268-DP. Bridgeport. Illinois.

EXTRA money—Boys-Adults: Distribute sales literature—orders will follow. Repeats. Fleming Co.. 319 W. T. Waggoner Building. Ft. Worth. Texas.

"DUPLISCALER"—Scales anything. Engraving. carving attachment. Sample engraving 25c. Desco. 6334-L Sepulveda. Van Nuys. Calif.

BUY Wholesale thousands nationally advertised products at big discount. Sent free "The Wholesale Plan." American Buyers' Service. 628-T Linden. Buffalo. N. Y.

FREE Book "505 Odd. Successful Businesses." Work home! Expect "Odd"! Pacific—37C. Oceanside. Calif.

FROM Basement To Big Time—In four years I went from basement lathe models to $120.000.00 gross sales per year. I could have done it in two years if this booklet I am offering you. on how to do it. had been available. It covers development. manufacture. sales. finance and business records. Send $2.00 today for what cost me $20.-000.00 to learn. Send now to Clay Manufacturing Co.. Box 199. Northfield. Minn.

YEAR round home business. learn moldmaking. plastercasting. painting. Instructions. Rubber Models. Paints. Hobby Shop. 410 So. Detroit. Toledo. Ohio.

23 BOOKS & MAGAZINES

MAGAZINES (back dated)—foreign. domestic. arts. Books. booklets. subscriptions. etc. Catalog 10c. (refunded). Cicerone's. 86-22 Northern Blvd.. Jackson Heights. N. Y.

ADULT Books—Illustrated Comic Booklets. 10 for $1.00. 24 for $2.00. All Different. Free gift with each $2.00 order. V. M. Rogers. Dept. PS. Box 14738. Cimarron Station. Los Angeles 18. Calif.

FASCINATING books—24 illustrated. assorted humor booklets $1.00. Illustrated catalog. foreign art. novelties 10c. Aladdin Book Co.. 210-PS Fifth Avenue. New York 10.

AMAZING new adult book bargains. Send stamp. Paul Vallon. 63 Perry. New York 14. New York.

BOOKHUNTERS! All Subjects. Send Wants! Jaher Book Service. 620-K East 178 Street. New York 57.

BOOKS Supplied. Used. out of print. Catalogue Free. Balliol. Box 85. Station "K". Toronto. Canada.

FREE catalog. 400 popular books. Bargain prices. Books Publishing Co.. 56 W. 24th. New York 10.

HYPNOTISM Now easy to learn. Photo-illustrated. guaranteed course $2.00 complete. Full details free. Power Publishers. 790 Broad. Newark 2. New Jersey.

ENGINEERING and Scientific Books. Educational Aids. Dept. 609. Box 248. Temple City. Calif.

HARD-To-Find Books Supplied. Send wants. Pierce's. Winthrop. Iowa.

ATHEIST books. Catalogue free. Truth Seeker Co.. 38 Park Row. New York 8.

BACK issues magazines supplied. Keller. 658 Grand Street. Brooklyn. New York.

INTELLIGENT Adults! New serious book: "Should Fatherhood Begin at Forty?" 256 pages. Index. bibliography. Quality paper. nice cloth binding. Circular free. or book $3.25 postpaid. Brower. 148; 426 East Girard Ave.. Philadelphia 25.

ADULT Books. Illustrated Comics 10—$1. Tricks. Free gift with order. 25c Catalogue. Rothleder. 102-P.S.B. Cathedral Station. New York 25.

BOOKHUNTERS! Scarce. unusual. miscellaneous books supplied. Atlantic Book Service. 2 Lawrence. Charlestown 29. Mass.

BACK-Date magazines. Specific issues; years. Arkell's. Northridge. California.

24 GAMES & ENTERTAINMENT

"PIXIE Packets" for children 7-14. A different craft kit each month. Yearly subscription $5.00. Entertaining. educational. excellent gift. Write for free literature. Pixie Packets. Dept. S-3. Ralston. Nebraska.

25 MAGIC TRICKS, PUZZLES, ETC.

MAGICIANS'. Gamblers' secrets exposed. Cards. Dice. Punchboards. Slot Machine. Catalog 10c. Book Co.. Box 671. St. Louis 1. Mo

LATEST Magic for pocket. parlor. stage. Catalogue 500 Tricks. only 10c. Unequalled magic service for 30 years. Douglas Magicland. Dept. 2. Dallas. Texas.

512-PAGE catalogue of 2500 tricks. pocket. parlor. stage. World's Finest Magic. Send $2.00 for catalogue (refunded first $8.00 order). Kanter's. S-1311 Walnut. Philadelphia 7.

POPULAR Tricks. Jokes. Novelty Books. Fun Galore! Catalog with Sample 25c. Rothleder. 102-P.S.T. Cathedral Station. New York 25.

DO Magic! Catalog and rope trick. 25c. Howard's Mystery Mart. 177 Park. New Haven. Conn.

"FUN With Newspaper" completely illustrated. 35c. Rocky Nelson. Box 766. Cedar Rapids. Iowa.

FREE trick and large illustrated catalog —35c. Lerro's Magic. 8111 Fifth Avenue. Brooklyn 9. N. Y.

MAGICIAN'S illustrated catalog and free trick 35c. Terry's Magic Studio. 6606 Duryea Court. Brooklyn 19. New York.

MAGIC Monthly. Year 25c. New 1952 Magic Catalogue 10c. New Joke Lists 5c. Magic Shop. Minneapolis 2. Minnesota.

"VENTRILOQUISM Selftaught". Complete. Easy Instruction Book 10c. Loyal. 4014-K Amendsen Avenue. New York 66.

TRICKS. Funmakers. Puzzles. Novelties. Catalog 10c. Andersen's. 6815S Ardmore. Chicago 31.

ATTENTION Magicians! Magic Tricks. Books. Jokers. Novelties. etc. Big Illustrated Catalog only 25c. Top Hat Magic. 529S Main. Evanston. Illinois.

"VENTRILLO." Professional Voice Thrower and Catalog 25c! Box 971-PS. Philadelphia.

VANISHING card trick. Card tossed in air vanishes. can be produced again complete 25c. Jack Eastwood. 694½ Jefferson. Chillicothe. Ohio.

26 COIN COLLECTING

GET Profit and Pleasure in collecting old coins. Send 10c for 56-page illustrated coin catalog. You'll be delighted with it. Send for it now. B. Max Mehl. 374 Mehl Building. Fort Worth. Texas. Largest rare coin establishment in U. S. Established 51 years.

SET nine Japanese invasion notes for U. S. $2.00. Illustrated coin catalogue 25c. Shultz. Salt Lake 10. Utah.

FREE! Foreign coin. banknote and Coin Collectors' Illustrated Catalog to approval service applicants. Send 3c postage. Tatham Coin Co.. Springfield-50. Mass.

FREE "Coin Collector's" new magazine. Rare coins and articles illustrated. Lawrence Bros.. Anamosa. Iowa.

COIN Magazine. 100 pages. Sample Copy 30c. Numismatic. 7320 Milwaukee. Chicago 31.

OLD Money Wanted. Will pay $100.00 for 1894 Dime. S. Mint. $50.00 for 1913 Liberty Head Nickel (not Buffalo). Big premiums paid for all rare coins. Send 4c for Large Coin Folder. May mean much profit to you. Numismatic Co.. Dept. 30. Forth Worth. Texas.

Copyrighted material

SIXTY Indianhead cents $2.00. Sayers, 1000 E. Unaka, Johnson City, Tenn.

21 DIFFERENT Uncirculated Cents $1.00. Price List 10c. Ray's, 109 Mathilda, Sunnyvale, Calif.

ILLUSTRATED coin catalogues. American $1.00. Canadian $1.50. List 10c. Canadian Coin Exchange, Box 35, Toronto A, Canada.

28 STAMP COLLECTING

FREE! Powerful Magnifying Glass. Jamestown Stamp, Jamestown 202, N. Y.

FREE—Illustrated Catalog! Kenmore, Milford C-58, New Hampshire.

AMAZING Offer! 500 United States stamps—including commemoratives, airmails, high denominations to $5.00—Only 15c to Approval Applicants!! Illustrated Bargain Lists free. Mystic Stamp Co., Dept. 55, Camden, New York.

FREE—Complete set of Famous Americans, Flags, Parks and Presidentials to approval buyers. Send 3c for 15 of the above stamps plus full particulars. Triboro Stamp Company, 145 Nassau Street, Dept. 209, New York 28, N. Y.

300 STAMPS For Only 10c! This mammoth value includes Airmails, Pictorials; stamps from strange countries cataloguing up to 25c each!! Also approvals. Mystic Stamp Company, Camden 55, New York.

POLAR Bear Triangle; Giant George Washington Six Colored Ecuador, Arctic Triangle, first American commemorative, Corsica, Devils Island, others. Everything free with approvals. Capital Stamps, Little Rock 10, Ark.

500 EXOTIC Japan Stamps—10c! Kenmore, Milford J-58, New Hampshire.

WE Give Away—Your Choice Latest Scotts Albums; Catalogue and available philatelic accessories. Realize—You Get These Worthwhile Rewards When You Buy From Our Better Foreign Approvals. Write Today For Full Particulars Sent With Trial Approval Selection. Americas' Stamp Service, Riverside 2, Calif.

FREE Stamp Collection:—100 different stamps from Europe, Africa, Asia, Scandinavia, Balkans, etc., 3c to approval applicants. Tatham Stamp Co., Springfield 50, Massachusetts.

1,000 UNIQUE Colorful attractive mounted stamps 1c-2c each. Rushed. Niagara Stamp Co., Niagara-on-the-Lake 72, Canada.

"HOW To Recognize Rare Stamps." Free Book Illustrated! Kenmore, Milford H-58, New Hampshire.

WOW! 203 All Different Germany 10c! Zeppelins, Semipostals, Airmails, High Values, etc. to new customers. Jamestown Stamp, Jamestown 509, New York.

U. S. Army & Navy Heroes on Stamps; 10c with United States approvals. Locust, Box 305-A, Harmon-On-Hudson, N. Y.

200 DIFFERENT, including Roosevelt triangle, 5c to approval applicants. S. Avalon Stamp Co., Springfield, Mass.

77 DIFFERENT United States—25c. Approvals. Utechts, 1143-A North Keeler, Chicago 51.

SHEPARD Stamp News. One year 20c. Sample Free. Box 1147, Chicago.

PENNY Approvals—Also advanced material. "Juno", 1267 Tutwiler, Memphis 7, Tennessee.

FREE Sample—Interesting informative. Illustrated! National Stamp News, Anderson, South Carolina.

333 UNIVERSALLY Different, 25c Penny Approvals. 1000 Different, $1.00. Seifert, Box 1672, Reading, Penna.

FREE! Rare Colorful San Marino's Columbus Pictorial set. With temptingly-priced approvals. "PSG," 195 Park, Lewiston, Maine.

FREE Bahawalpur Jubilee set to approval applicants. Lighthouse, Box 1516, Colorado Springs, Colorado.

YOURS! Three Liberia Triangles, Seychelles, Mauritius, Albania, Airmails, Africa, etc. Everything 10c with approvals. Rodman, 450 Locust Avenue, Burlington, N. J.

40 DIFFERENT U. S. 10c. Pricelist free. Seidenberg, Appleton 944, Wisconsin.

OLD scarce U. S. seconds on approval. Slightly defective, bargain prices. Hearnfeld, Clintonhill Station, Newark 8, N. J.

100 DIFFERENT U. S. 25c. Approvals. Buckeye, Box 53, Mansfield, Ohio.

50 DIFFERENT Worldwide 3c! Approvals. Vinny Jo, Box 3062, Seattle 14, Wash.

TEN dandy sets, 10c. Approvals. Faszold, 423a Cameron, St. Louis Co. 15, Mo.

1000 MIXED U. S. and foreign 25c. Monjar, Fairmount, Cincinnati 14, Ohio.

½—1—2c APPROVALS. Bargains Galore! Cole, 43G Rinewalt, Buffalo 21, N. Y.

WONDERFUL Offer 7 complete mint sets Manchukuo, etc. only 10c with approvals. Reich Stamp Co., 4647 Kenmore, Chicago 40, Dept. S25.

FREE Mint British Colonies from Tonga, Seychelles, Brunei, Transjordan, Sarawak, Solomon Islands, Caymans, Gilbert Ellice—Free with approvals. Viking, 130-P Clinton St., Brooklyn, New York.

UNBEATABLE! Over 100 Different with triangles, Liberia, Tangier, Morocco, etc. Everything 10c with approvals. Reeve, 576-A Crawford, Windsor, Ont., Canada.

90,000 STAMPS Sale. Grabbag 30c. Special sellout lot $1.00. Extra special with sets. Stock cards free gifts $2.00. Literature free. Schollmeyer, Box 48, Brooklyn 25, New York.

MINT plate blocks 20 cents. Complete lists. Tunstall Stampex, Greenville, North Carolina.

FREE! Worldwide Collection with Approvals. Philatelist, 105 Windsor, Reading, Pa.

18 VALUE Pictorial Set. Free to approval buyers. Pleasure Stamps, 1865A—52nd, Brooklyn 4, N. Y.

MINT (Unused) United States approvals. Patrick Agencies, 3650B Central, Indianapolis 5, Indiana.

1000 FINE World Wide Stamps off paper $1.00. William Anderson, Box 855P, Mountain Home, Tennessee.

500 MIXED Stamps and Surprise Packet for 10c with approvals. Fahsing, Dept. PS Atascadero, California.

LION Triangle, elephant, 28 others, 3c. K&S, 303 Clinton, Newark, New Jersey.

WHOLESALE lists—bargain collections, accumulations, singles—mailed for 10c (refundable). Largentiere Company, 6462 83rd Place, Forest Hills 79, New York.

1/10 CATALOGUE while our supply lasts on many over stocked foreign stamps. Try them on approval. Premiums on purchases. Roseland Stamp Co., Dept. 9-E, Spring Lake, Michigan.

GIGANTIC Collection Free—Includes Triangles—Early United States—Animals—Commemoratives—British Colonies—High Value Pictorials etc. Complete Collection plus Big Illustrated Magazine all free. Send 5c for postage. Gray Stamp Company, Dept. PR, Toronto, Canada.

PAYING High prices for approvals? If your collection numbers under 15,000 try our 1c and 2c approvals. In books of 1,000 different. Lots to choose from at lowest prices. Also special offer to customers. Clark, Box 544-U1, Muskegon, Michigan.

BEAT this if you can! Over 520 different stamps, catalog over $11, for only 25c to serious adult approval applicants. Free illustrated price list. Cosmophilatelist, Andover, New Jersey.

"GOYA Nude" set of Spain 25c with approvals. Royal Stamp Company, Tamaqua 2, Penna.

FREE "Stamp Finder." Tells instantly country to which any stamp belongs. 32 pages profusely illustrated. Garcelon, Calais 18, Maine.

UNITED States all different 8 airmails plus 50 others, including commemoratives for 10c to approval applicants. Sunset, Dept. 393, Box 47, South Gate, Calif.

SOUVENIR sheet free if you request approvals. Knight, Box 3770, Portland 88, Ore.

APPROVALS ½c up from 33,000 collection. Chur, Box 245, Buffalo 12, New York.

327 DIFFERENT Stamps 25c! Including Early Canada, Newfoundland, British Colonies, Vatican, Red Russia, Hitler Heads, Indian States, Animals, Airmails, French Colonies, rarities, unusuals. Every stamp different. Rare bargain only 25c with our Bargain Approvals. Money back guarantee. Niagara Stamp Co., Niagara-on-the-Lake 62, Canada.

FREE, Scott's International Album. Other big premiums. Full particulars with approvals. Raymax, 68-X Nassau St., New York 38.

50,000 STAMP Grabags 25c each. Anderson, 630a Bingaman, Reading, Pa.

307 ALL Different—Only 15c! Beautiful collection: Commemoratives, Triangles, High Values, Bicolored Stamps, etc. Garcelon, Calais 418, Maine.

FREE Jugoslavia Red Cross with Approvals. Dennev 2627 East Tenth, Tulsa, Oklahoma.

150 ALL different United States commemoratives and postage $1.00. Jeffry Stamps, Box 223, Forest Hills 75, N. Y.

25 ARGENTINE stamps 25c. Cheque or M.O. Casilla 2861, Correo central, Buenos Aires.

PENNY Approvals by country. M. H. Hoerning, 102, Farmington, Ark.

FLAG Stamp—Free with hygrade U. S. approvals. Weniggman's, 1933 Patterson, Chicago 13.

100 DIFFERENT Spain 25c. Penny approvals included. Reed, Box 980, Chicago 90, Illinois.

FREE Collection—over 100 different stamps of world—commemoratives, animals, natives, ships, famous men, others all to approval buyers; also Scott Albums, Catalogs. Bell Stamp Service, Dept. W-3, Bell, California.

60% DISCOUNT bargain approvals. Gaines, 716 South Sixteenth, Mattoon, Ill.

STAMP Wallet containing small Ireland collection 5c with approvals. Amberg, 537N 35th, Union City, New Jersey.

BEGINNERS African Stamps Free. Melrose Distributors, 6 Rockland St., Melrose, Mass.

NICARAGUA Sports, Costa Rica Agriculture sets 10c with approvals. Seminole Stamps, Box 1138, Coral Gables 34, Fla.

250 STAMP hinges and 10 different Argentina free with approvals. Jaydee, 218 West Dickinson, Grand Rapids 7, Mich.

FREE 10 different Siam to Approval applicants. Lucas, Box 387S, Lombard, Illinois.

ALBUM! Holds over 1000 stamps! Only 10c! Stampmart, Hartford 1, Conn.

START your own Stamp Business. Send for Free circular. Donald Shepard, Box 1147, Chicago.

FREE price list. Beginner's packet. Stampingrounds, Box 55, Glastonbury, Conn.

FREE U. S. illustrated catalogue for stamps, albums, supplies. Stone, 45 Bromfield, Boston 8, Mass.

NUDES Set; Colorful approvals—10c! Atlas, 2830-P Eisenhower, Racine, Wisc.

UNKNOWN Rarities in your collection. Some color varieties of common stamps are worth many dollars. Scientific stamp color gauge identifies 140 colors. Regular price 50c. Yours for only 10c. Approvals. Harris & Co., 140 Transit Bldg., Boston 17, Mass.

29 ANTIQUES, RELICS & INDIAN GOODS

SPECIAL: 10 Indianheads, $.78—5 Arrowheads, $1.23—Tomahawk, $3.68—Scalping knife, $1.88.—Sword, $14.88—Bayonet, $1.98—Geode, Pyrite, Molybdnum, Galena, Agate, Jasper, Selenite, Fossil, Gastropod, Crnoidstem, Chalcopyrite, each $.48.—Heike, Wenona 27, Illinois.

SELLING 500 Historical Firearms, 20,000 Indian Relics, Collectors Cartridges, Coins, Confederate Money.—Revolutionary War, Civil War, Indian Wars Flintlocks, Muskets, Blunderbusses, Kentucky Rifles, Revolvers, Pistols, Swords, Ramrods, Bayonets, Bulletmolds.—Arrowheads, Tomahawks, Gempoints, — Mounted Birds, Squirrels, Deerheads, Steerhorns, Percussion Caps, etc. Send 35c for illustrated catalog. Heike, Wenona 37, Ill.

30 MINERALS & PRECIOUS STONES

"GENUINE" red Arizona Rubies (Garnets). Send quarter for packet. Bitner's, Box 1025-O, Scottsdale, Arizona.

GEMSTONES, Mineral specimens. Every variety. Lowest prices. Postcard brings free booklet. Plummer's, 4720 Point Loma Ave., San Diego 7, Calif.

ROCKHOUNDS—Arizona moss agate three sawed slabs $1.00. Sawed red jasper $1.00. Cavecreek Agate Mines, Box 97, Cavecreek, Arizona.

Copyrighted material

GEMOLOGY Books! Catalog 10c. Atlantic Books, 2 Lawrence, Charlestown 29, Massachusetts.

GEMS. Precious and semi-precious, genuine, from world-wide sources. Deal Direct, no overhead, save money. Catalog 10c. Hill Co., 5450-K Portland Rd., Salem, Ore.

CUT Beautiful gems. Easy. Profitable. Free list equipment—Rough Materials. Gems. Supplies. Books. O'Briens. 1116 Wilcox, Hollywood 38, California.

PANCHO Rock Hound, California, Mexican Minerals. Gems. Write to 818 Ft. Stockton Drive, San Diego 3, Calif.

GEMCUTTING. Silvercraft authority. Illustrated magazine tells how. Cut rocks, make jewelry. 150 ads illustrating equipment, offering gems for collectors, cutters. Postal brings literature. Lapidary Journal, Drawer D, Palm Desert, Calif.

31 HOBBIES, COLLECTIONS

INVENTING can be an interesting and profitable hobby. Write for complete particulars. Institute of American Inventors, Dept. 30-E, 631-E St., N. W., Washington 6, D.C.

33 ARMY patches, collar ornaments. Campaign ribbons plus introductory surprise, only $1.00; prices 10c. Hobbyguild, Box 71, Sta "A", Brooklyn, New York.

MILITARY miniatures, catalog 10c. Bob Bard, 20 E. Lexington, Baltimore 2, Maryland. (Suite-310).

50 DIFFERENT army embroidered patches $1. Other bargains. Insignia Mart, 703B Broadway, N. Y. C. 3.

NEVER before sold by the pound at such low prices. Jewelry parts, findings, beads, pearls & stones. Findings and parts assorted $2.50 lb. 5 lbs $8.50; Imported Beads assorted $1.50 lb. 5 lbs $6.00; High Luster Pearls assorted $2.00 lb. 5 lbs $8.50; 100 imported Stones assorted $1.50, 1000 assorted $5.00. Merchandise Distributing Co., Dept A, 19 East 16th St., New York 3, N. Y.

WANTED—C'garette, tobacco cards. Write Charles Bray, East Bangor, Penna.

MINIATURE felt baseball pennants 16 for 25c, one for each American and National League team. Hart Processing, Marine City, Michigan.

UNUSED matchbook covers—100 different $1.00—36 page Catalog 25c—Charles Edelman, 1311P East 84, Cleveland 3, Ohio.

EASY To Learn. Leathercraft is fascinating. Make personalized belts, billfolds, purses. Sell them or keep for yourself. Low-priced leathers. Free catalog. Tandy Leather, Box 397 Dept. 5, Tulsa, Oklahoma.

AMAZING hobby—Collect authentic armed forces insignia, ribbon bars, embroidered patches, naval rates; fascinating assortment of 57 for only $1; special gift free with order. Pritt Co., Dept. S9, 14 West 27th Street, New York City.

32 PHOTO FINISHING, PHOTOCOPIES, ETC.

OIL coloring photographs can be a fascinating hobby or profitable sideline for those with artistic talent. Learn at home. Easy simplified method. Send for free booklet. National Photo Coloring School, 835 Diversey Parkway, Dept. 1744, Chicago 14, Illinois.

YOUR eight exposure roll developed with three prints each good negative 50c. Two each 40c. One each 30c. Reprints 3c. A few cents postage appreciated. L. A. Eastman, Bode, Iowa.

ROLL Developed and 4x6 or 3¼x4½ oversize glossy Velox prints, 8 exposure 40c, 12 exposure 60c, 16 exposure 80c. Clemet Photo Service, 1318 West Columbia Avenue, Philadelphia 22, Pa.

8 JUMBO prints 30c. 12-45c. 20-95c. Free Mailers. Ace Photo Service, P.O. Box 512, Waterbury, Conn.

NEW—16 oversize contact prints or 8 jumbos in album, 25c with this ad. Album Studios, Dept. S, Weatherford, Oklahoma.

EIGHT 5x7 or Five 8x10 enlargements $1.00. Wilart Enlargers, Box 967, Little Rock, Arkansas.

ENLARGE — 2¼x3¼ — 2¼x2¼ — 35mm negatives; 5x7—25c; 2—45c; 3—60c; (different negatives) double weight paper; 8x10—40c, 2—75c, 3—$1.00. DePaul Labs, Box 6, Bronx 60, New York City.

FREE Mailers. 8 contacts 30c. jumbos—40c. 12—45c. Jumbos—55c. reprints—4c. jumbos—5c. Western Photo PS92, Box 298, San Francisco 1, Calif.

33 MOTION PICTURES, SLIDES SOUND EQUIPMENT

5,000 NEW-Used 8-16mm. Silent-Sound Films, International, 2120 Strauss, Brooklyn 12, New York.

GUARANTEED Fresh 8mm roll, magazine; 16mm roll, magazine movie film. Color, b&w. Free catalog. Eso-S, 47th Holly, Kansas City 2, Missouri.

8-16MM. Silent-sound films. Complete rental library. All latest subjects. Free catalogue. (sample film 10c). Garden Film, 317 West 50th, New York 19.

MOVIE Camera Film: 8mm roll $1.50. 16mm 100' $3.00. Free processing. Better Films, 742 New Lots, Brooklyn, N. Y.

RENT 16MM sound films 50c reel. Large selection; free catalog. U. C. Film Service, 128 Chestnut St., Roselle Park, N. J.

U. S. Secret Weapons in 3rd dimension. 10 full color views complete with viewer. $1.00 postpaid. Stereo-Color Corporation, 1317 Commerce Bldg., Rochester 4, New York.

RECORDING Tape Plastic Red Oxide 1200 ft. $3.00. 600 ft. $2.00. 150 ft. sample 50c prepaid. Write for quantity discounts. Fidelity Sound, 1412 Flagler, Jacksonville 7, Florida.

FREE Giant catalog of 8mm & 16mm films for home movie enthusiasts. Films for every occasion .Lee Stann, Dept. PS9, 11 Willard Ave., Mt. Vernon, New York.

TAPE Recorders, Tapes, Accessories Unusual Values. Dressner, 624 East 20th Street, New York City 9.

34 CAMERAS, PHOTO SUPPLIES

BASS Says: Trading cameras a national habit since 1910. Write to Bass the old "Horse Trader." A postcard will do. Simply say: "Bass, I have and I want . . . How much will you allow me?" Satisfaction guaranteed. Bass Camera Company, Dept. AG, 179 W. Madison St., Chicago 2.

INSURED and guaranteed repairs at trade prices. Camera Repair Corp. of America, 225-C Broadway, New York 7.

ADD "Spice" to home projection shows with colorful old-time Nickelodeon slides. 2x2. Write for Free list. Nickelodeon Co., New Fleidner Bldg., Portland 5, Oregon.

BUY Photographic Supplies Wholesale. Films, cameras, projectors, enlargers, binoculars. Free Catalog. Capitol Photo Supplies 2428 Guadalupe, Austin, Texas.

GE PR-1 memory meters. New $20.55. Free catalog. 1001 bargains. Dealer's Mart, Dept. PS9, 11 Willard Ave., Mt. Vernon, New York.

PHOTOGRAPHY for pleasure or profit. Learn at home. Practical basic training. Long established school. Write for free booklet. American School of Photography, 835 Diversey Parkway, Dept. 174C, Chicago 14, Illinois.

16MM B&H Autoload, f1.9. Brand New. $124.50. (Was $214.00). Free catalog. 1001 bargains, Dealer's Mart, Dept. PS9A, 11 Willard Ave., Mt. Vernon, New York.

35 MUSIC, INSTRUMENTS & SONG WRITERS

WANTED! Poems for musical settings. Write Songwriters' Service, Clifton, N. J.

POEMS Wanted to be set to music. Free examination. Send poems. McNeil, Master of Music, 510-PS, S. Alexandria, Los Angeles, California.

SONGWRITERS! Send poems, songs. Music Service, 243 West 72nd St., PS, New York 23.

SONGWRITERS New, Different Honest. Send song lyrics. Dick Reynolds, Leonard 7, Texas.

YOUR Words and our music—a winning combination! Send poems. Free examination. Song Promotion Guild, 350-S Broadway, New York 13.

POEMS Wanted for musical setting. Send poems for free examination. Five Star Music Masters, 646 Beacon Bldg., Boston, Mass.

POPULAR Songs. How to write and sell them. Write for free booklet Successful Songwriting. Gateway Songs, Box 2470, Hollywood 28, California.

POEMS Wanted for musical setting on percentage basis. Broadcast consideration. Sooner Song Co., 22-PS North West 8th, Oklahoma City 2.

PLAY popular piano by ear. Instructions $2.00. Graham, Box 224, Pomona, Calif.

GUITAR—play any song by ear or note in 7 days! Or get money back. 52 photos, 87 diagrams show how. Includes 110 Popular & Western songs. $1.98 postpaid or C.O.D. Ed Sale, Studio 400, Point Pleasant, New Jersey.

POEMS Wanted! Opportunity Knocks! Nationally Known Song Writer composes music to your song poems. Send poems today for free examination and free copy of "Song Writing Secrets". Melody House, Dept. PS, Box 19007 La Tijera Station, Los Angeles 43, Calif.

ELECTRIC Guitars, accordions, amplifiers. Wholesale. Free catalog. Carvin, Baldwin Park, Calif.

1952 ACCORDIONS—Wholesale. Free catalog. American Accordion Center, 5329 Belmont, Chicago.

SENSATIONAL Free Booklet, "How To Write and Sell Songs." Get the facts first. Poems examined Free. Reliable Music Service, Box 430-B, Hollywood 28, Calif.

ORDER our song hit, "You Can't Make Honey." Hear what music we can write to Your poem! Record, $1.25. Music copy, 50c. Free poem examination. Song Service, 333 W. 56th, Dept. P.S., New York 19, N. Y.

36 RADIO, TELEVISION, SUPPLIES & EQUIPMENT

MAKE simple, tubeless, batteryless, distance-getting crystal radios. Crystal and illustrated instructions 25c postpaid. Allen, 427-S, Clinton, Mo.

BUILD 15 Radios—Only $1.30 Each. Experience Unnecessary. Home Radio & T.V. Course, includes Trouble-Shooting and Servicing Lessons, Radio Principles, Code Instructions, Practical Radio Building and Repairs. You build and keep Receivers, Transmitters, Amplifiers, Test Equipment, Code Oscillator. All parts, tools, instructions supplied including Radio Tester and Electric Soldering Iron. Write for full particulars and receive absolutely Free your copy of "Radio & TV Repair Guide". No obligation. Progressive Electronics Co., 497 Union Ave. Dept. PS-22, Brooklyn 11, New York.

15 TESTED One-tube circuits 25c, including "Radiobuilder," catalog. Laboratories, 1131-T Valota, Redwood City, Calif.

POWERFUL subminiature Pencil-Radio. Mono-coiled tuning. Postpaid $3.00. Tel-Ray Electronics, 2153 East 28th Street, Brooklyn 29, N. Y.

SIMPLE radio television analyzer service sets make money $1.00 prepaid. Stegotronics, Colchester, Conn.

EIGHT Radio Building Plans $1.00. Master Kit Company, Box 206, Belleville, Ontario.

FREE 236 Page 1953 Television-Radio-Electronic Catalog! World's largest stocks, lowest prices. Complete supplies for builders, experimenters, amateurs, servicemen. Latest television, radios, phonos, recorders, sound equipment. Thousands of parts, tubes, test instruments, books, diagrams. Top quality money saving values. Get yours now! Allied Radio Corp., 833 W. Jackson Blvd., Dept. 31-J-2, Chicago 7, Illinois.

EVERYBODY'S set and tube tester, ten dollars. Free Literature. Stegotronics, Colchester, Conn.

ELECTRONIC Problems, devices, advice. Free information. Registered Engineer, 5208-F Onacrest, Los Angeles 43.

AMAZING "electric eye." Unlimited uses. $3.50 postpaid. Instructions included. Springfield Enterprises Box 54-A9, Springfield Gardens 13, New York.

MAKE Distance-Getting crystal radio that works. Fully illustrated booklet fifteen cents. Money back guarantee. Francis, Box 5963, Cleveland, Ohio.

PASS FCC amateur radio theory and code exams. Simple recorded home study course, low as $7.95. Details free. American Electronics, Dept. PS-9, 1451 Wilkins Avenue, New York City 59.

Copyrighted material

GOOD Paying Business Silvering mirrors, plating autoparts, reflectors, bicycles, bathroom fixtures, etc., by late methods. No tanks or shop required, outfit furnished. Free Booklet. Gunmetal Co., Ave. E. Decatur, Illinois.

LIQUID Molding rubber, $2.95 quart, $9.95 gallon prepaid! Plastercraft Supply Company, 3051 St. Clair Ave., Cleveland 14, Ohio.

HEATING And Ventilating—Air Conditioning Library. You save a huge 60% of publisher's price on this sensational offer—one of the most exciting we've ever made! You get the world's most complete, most lavishly illustrated, authoritative home-study course in principles, design, selection and application of Heating and Air-Conditioning Appliances and Systems for residential and commercial use . . . A Complete Library of Six big books, each indexed. Over 2,000 fact-studded pages, many hundreds of tables, charts, diagrams, photos, drawings. Easy-to-Follow "question and answer" instruction. Here's Everything you'll ever need to know to become a well-paid, top-ranking expert in this excitingly important field. All the facts, illustrated on Blueprint Reading, Architectural Drawing, Sheet Metal Work, Insulation, Heat Losses and Gains, Thermo-Dynamics, Logarithms and Tables, Furnaces, Unit Heaters, and more! Prepared by 18 of the nation's top engineers and authorities. Our supply of these handsomely bound, silver-stamped volumes is severely limited. In all fairness, it must be "first come, first served." Big 11 lb., 6-Volume Library published at $24.80. You send only $9.98! Money back if not fully delighted. Dept. 952-C, Popular Science, 353-4th Avenue, New York 10, N. Y.

EXTRA Money—No Selling—operate vendors. Amazing profits, details Free. Silver King, Suite 221, 622 Diversey, Chicago 14.

OPERATE profitable mail order business. Write Walter Service, 4159-B East 112th, Cleveland 5, Ohio.

MAKE money addressing envelopes. Our instructions reveal how. Glen Glenway, 5713 Euclid, Cleveland 3, Ohio.

HOW and where to obtain Capital? Free details. Star Service Wapakoneta, Ohio.

RECAST old batteries into new. Latest achievements. Battery Laboratories, Minneapolis.

MAKE $3.00 Hour At Home—I do—making sandals. George Youngs, 1308 South First, Arcadia, California.

$5 AN Hr. & more possible in your home. You Can Paint It With Suede—Fabulous new business—spare or full time. Spray on rainbow colors—Auto dashboards and trunks—Signs—Radios—Toys—Figurines—Lamps—etc.—beautified with amazing new 3rd dimensional plush-like finish with touch-appeal as well as eye-appeal. I'll send you complete, step-by-step plans and equipment, including high-velocity spray gun for no-risk examination in your own home. Send no money—just name and address. Coast, 1004-AB S. Los Angeles St., Los Angeles 15.

START Mailorder Bookshop—Build your future. 25c brings booklet, samples, exciting ideas. General Publications, Ossining 1, New York.

ELECTRO Plating equipment—New and used. Complete assemblies. All sizes for all types of plating. Baby shoe metallizing sets. Mounts, supplies, instructions. Free catalog. Hollywood Bronze Supply, Dept. R, 1624 E. First Street, Los Angeles 33, Cal.

MAKE Money spare or full time, casting Metal Toys and Novelties. Big wholesale and chain store demand for Autos, Soldiers, Ashtrays, Banks, etc. keeps manufacturers busy. Production moulds furnished for up to 100 and more castings per hour. No experience or special place necessary. Write for information and illustrations of patterns needed. Metal Cast Products Co., Dept. E, 1696 Boston Road, New York 60, N. Y.

ENVELOPES addressed accurately, reasonably. Fast Service. We have capable addressers in your city. Glenway System, 5713-X Euclid, Cleveland 3, Ohio.

EARN Extra Money weekly mailing circulars for advertisers. Complete instructions—25c. Siwaslian, 4317-B Gleane Street, Elmhurst 73, New York.

NATURAL Molding Latex. Extra thick. Free sample. W. Wooley, 115B Donald, Peoria, Illinois.

SEASHELLS for making Gifts, Novelties, Jewelry, handicrafts. Illustrated pricelist free. Instruction book of 155 designs $1. Gifthouse, Box 4550-PP, Coral Gables, Fla.

BIG Money and fun growing Live Miniature Ming Trees on your window sill. Write for Free rare tree seed and plan. National Nursery Gardens, 8463 South Van Ness, Inglewood 4, Calif.

VENDING Machines—A post card may bring you the opportunity you are waiting for. No experience necessary. Stamps nut, candy, gum and others. Small investment. Write Schoenbach Enterprise, Dept. 9, 1645 Bedford Ave., Brooklyn 25, N. Y.

MAKE Money at home—mailing literature—running Ads. Pleasant and profitable. Write Miller 1772-R Carlyon Road, East Cleveland 12, Ohio.

EARN $15,000-$30,000 annually. Franchise protected. Guaranteed minimum $12,500 or money back. Live at home. No merchandise to buy. Selfemployed. One of most exclusive and noncompetitive businesses in United States. Send 50c for explanatory book. Money refunded when book returned. Harrell & Company, Box A-2, Louisville, Illinois.

MAKE Rubber Stamps, repair dolls, learn invisible reweaving, repair sewing machines. Catalogue of "40 Ideas." Universal, Box 1076-B, Peoria, Ill.

IMPORT-Export! Opportunity, profitable, world-wide, mail-order business from home, without capital; or travel abroad. Established World Trader ships instructions for no-risk examination. Experience unnecessary. Free details. Mellinger 19, Los Angeles 24.

POPCORN and Potato Chip equipment. Long Eakins Company, 5263 High, Springfield 99, Ohio.

WATERLESS Hand Cleaners. Highly profitable home mail order and mfg. business. Simply add water to concentrates or ready-packed under your own label. Everything furnished. Western G Aircraft, Los Angeles 19.

SELL By Mail to automobile owners. Millions of prospects. Fast selling items. Everything furnished. Write: Eastern, Box 142-S, Dorchester 24, Mass.

FREE Folder—100 Ways to Make Money in Silk Screen Printing. National, Box 88-PS, Dorchester 22, Mass.

LEARN Sewing Machine Repair. Electrify. Rent. Sell Spare Time. Make "Big Money" like our other Men-Women do. New machines, motors, parts wholesale. Details free. Taylor Service, Hamilton PS-9, Ohio.

LEARN metalizing baby shoes, jewelry, gifts. Bronze gold, silver. Complete success plan free. Kiktavi Building, 7217-PS South Broadway, Los Angeles 3.

ADVERTISING book matches—Cash in on big demand—sell Union Label matches. Cuts for all businesses and political parties—Free powerhouse selling kit—low prices—protection guaranteed on repeat orders—Cash commissions. Superior Match Co., Dept. PX-952, 7530 Greenwood, Chicago.

UNPAINTED figurines. No shellac. No lacquer. Write for booklet. Star Novelties, 1470 Washington Ave., New York 56, N. Y.

WANTED! Home Producers, by Manufacturers in our Contact Service. Become a sub-contractor, casting plastic products for these companies. Thousands of easy-to-make items required. Cash in at home, without previous experience. Write for free list of 100 most wanted items. Plastic Service Assoc., Dept, PS9, East Boston 28, Mass.

BE own boss. Operate profitable mail order business. Sensational new monthly magazine tells how to start; where to find items; how, where to advertise. Hundreds fascinating money-making facts from experts every month. 50c copy. 12 big issues only $5. Mail Order Business, Dept. B, 19 West 44, New York City.

TRADE Magazines will help You to success. Get latest copies through our Easy-to-Get-Acquainted Service. Hundreds of business, trade, educational, professional, hobby, sport, plumbing, poetry, poultry, printing, rabbit raising, radio, real estate, refrigeration, roofing, selling, welfare, specialized farming and others covering All interests. Send for List today. It's Free. Commercial Engraving Publishing Company, 34S North Ritter, Indianapolis 19, Indiana.

OPERATE Profitable Mailorder Business. Particulars Free. George Lenhoff, Lincoln 1, Nebraska.

LIQUID Rubber Make Flexible Molds. Quart $2.95, ½ gallon $4.75. Gallon $8.50 (prepaid). Chaney, 1130 East 16th Street, Jacksonville 6, Florida.

BOOKKEEPERS—Earn $5000 yearly part-time. Sell, operate new sensational CPA bookkeeping service. Kern, 4942A Vineland, North Hollywood, California.

VENDING Machines earn big money! An investment as low as $10.50 will start you in this fascinating profitable business that can lead you to the road of success and independence. Routes can be established and operated in either full or spare time with no experience needed. Write for full details and our Free catalog illustrating our nut, candy, gum and stamp vendors; also pin ball machines, music boxes, etc. Write immediately to Parkway Machine Corporation, Dept. 9, 715 Ensor Street, Baltimore 2, Maryland.

RADIO Advertising Without Risk! Pay "per order"! 400 broadcasters! Details free! Simon-C8, 48 Fifth Avenue, Pelham 65, New York.

MAKE Money At Home as renewal headquarters for all magazines. Big Christmas sales profits now. Liberal commissions. Supplies furnished. Write for Free Catalog. McGregor Magazine Agency, Dept. 510B, Mount Morris, Illinois.

MAKE $6.73. You sell one—and they're amazingly easy to sell! We have new Adding Machines in original factory cartons you can sell for only $14.95 and you make 45%. They're executive model portables, precision built with automatic clearance, direct subtraction, fully guaranteed. Send for life size color photo with full details. Write today to Lightning Adding Machine Co., Inc. Dept. P-5, 1260 West Second Street, Los Angeles 26, Calif.

START your own mail order business with hundreds of repeat, sales proven, hobby-craft items. No stock to carry. No shipments to make. We pack and ship for you. For details and instructions send 25c. Mail Order Service, Dept. PS25, 845 S. Wabash, Chicago 5, Illinois.

HAVE Home Mail Business—Success assured beginners with $100 or more. Idea-Mailbox Service. Booklet 25c. Details Free. NMD Agency, Box 88-K, Dorchester 22, Mass.

ALL Profit: Get manufacturer's, distributor's, dealer's profits yourself by making, selling, installing important heating specialties. Details free. Harrington, Box 103SE, St. Matthews, Kentucky.

GET Dollar Orders by Mail—keep 90c. $10 starts You. Details free. Genmerco, Box 142-K, Dorchester 24, Mass.

TO $35.00 Weekly Spare Time. Home Operated Mail Order Business. Successful small "beginner's" plan. Everything Supplied. Lynn, 10420-C National, Los Angeles 34, California.

REPRESENT us in your area. Write for descriptive folder. International Trading Center, 1900 Euclid, Cleveland, Ohio.

FREE Formulas and Instructions for making Newest big profit perfume specialties from Tap Water. DeCasto of Hollywood, P. O Box 447, Hollywood 28, Calif.

MAKE flexible molds! Cast plaques, bookends, figurines! Free sample! H. Tooker, 630-A Chestnut, Hamilton, Ohio.

INCOME from local information. No selling. Write—Neherco, La Verne 6, Calif.

MONEY Furnished. Nationally known corporation will buy outright or finance and promote sale on royalty basis of any desirable new device, formula, preparation, cosmetic or invention. Write to President, 10 E. Coulter Street, Phila. 44, Pa.

OPERATE profitable mailorder business write JSSCO, 2623-P Columbus, New Orleans 19, Louisiana.

"MAKE Perfume" Profitable Mailorder business—Catalogue Free. "International," 6347 Parnell—PS-9, Chicago 21, Ill.

MAKE Perfumes At Home. Write, "Carey Laboratories," 1914 Chouteau PS-9, St. Louis 3, Missouri.

MAKE durable plastic—1c pound. Makes attractive floors, walls, built-ins. Build good home, $150.00 room. Bays Laboratory, Oklahoma City 9.

Copyrighted material

SMALL investment in Artkote molds, puts you in $5.00 hour stone facing business. Sample mold $2.00. Dividend Company. Liverpool 2, New York.

"PROFITABLE Decorating Business." Fascinating! Instructive. Only $1.00. Fran Council. Box 150-P. Wildwood, New Jersey.

ADDRESS Envelopes. Postals at home—longhand, typewriter. Particulars 3c stamp. G. Torrey, Melrose 76, Mass.

$250 WEEK reported! Free book "505 Odd, Successful Businesses." Work home! Expect something Odd! Pacific-36C Oceanside, California.

START Business without Capital! Reliance. 15-B Park Row, New York 38, N. Y.

EARN Money At Home With Your Typewriter! Spare time! Details free. Edwards, Publisher, 3915-PS, 12th, Des Moines 13, Ia.

PROFITABLE home business. Electroplate novelties, auto-parts, mirrors, baby shoes, etc. Portable Tyco Electro-Plater $5.95. Free booklet. Tyco Metals, Box 13231-CE, Houston 19, Texas.

HOME Work! Addressing Envelopes. Free Details. Self addressed stamped envelope appreciated. Janosik Service, 5527-X South Sangamon, Chicago 21.

MAKE Money By Mail. Leo Garick, Box 497, Pittsburg, Calif.

INFORMATION: any subject. Reasonable Fee. P. J. Brady, Aberdeen, S. Dak.

BUY Wholesale thousands nationally advertised products at big discount. Sent free. "The Wholesale Plan." American Buyers' Service, 628-S Linden, Buffalo, N. Y.

NEW Kind Mail Order Home Work! Carry no merchandise. No selling, manufacturing, experience, advertising investment, capital necessary. Eye-opening proof 3c stamp. P. Torrey, Melrose 76, Mass.

FIX typewriters. Free booklet describes our modern, inexpensive home-study course. Factory methods taught. Write: Typewriter, Building 4, Tarentum, Penn.

COLORGLAZED Concrete Pottery made without molds. Patented method. Cemetery products, novelties, tiles. Basement leak-sealing. Money-making projects. Booklet, details free. Men only. National Potteries, Grand Rapids, "Minnesota."

MAIL Selling opportunities galore! Free! Wehner, Box 142-E, Roxbury 19, Mass.

FIGURINES unpainted, free illustrated list. Haverty Products, 822-A 17th Street, Altoona, Penna.

$150.00 WEEKLY! Men! Women! Exceptional business! Douglas Service, Cambridge, Minnesota.

DRUG Sundries. All popular brands latex. Fresh stock. Sell to drug stores, physicians and jobbers. Free distributors price list. Sanitary Sales Co., Box 934, Rockford, Illinois.

MEN-Women—"Everybody Likes Candy." Learn to make professionally at home. Tools and supplies. (Our 42nd year.) Ragsdale Candies, East Orange, N. J.

BUILD Own Business. New repeat product. Every home needs. Unusual proposition and sample 25c. Gordon Publishers, Box 23, Pawtucket, Rhode Island.

CLEAN automobiles, wash walls, carpets, upholstery. Complete outfit and instructions. One gallon concentrate—special gun only $9.95. Zipp-reme Chemical Co., Dept. P, Greensburg, Pa.

BUY it wholesale. Manufacturers, Distributors. Over 850,000 items. Literature free. Olsen, 1231-B East Third St., Duluth 5, Minnesota.

SENSIBLE, profitable, delightful business. Trifling capital. Carl Jamer, Manorville 5, New York.

$46 FROM Square Foot Plywood; Jigsaw necessary. Write: Woodart, Bridgewater, Massachusetts.

MEN-Women! Make Big Money at home making novelties. Spare or full time. No experience needed . . . we show you how. Send for Free Booklet, "There's Money in Plastics." (Liquid Marble). Bing Products, PS-952, Watertown 72, Mass.

THROWN Away! Tons of ground rubber by recappers. Make it into Plastic Rubber! 1,000 uses! Easy! Inexpensive! Start profitable business! Instructions, samples $1.00. Ceeten Products, 506-S, Cornelia, Ga.

HOMEWORK—easy—profitable. Rush name. Siegel, Box 183-PS, New York 2.

OPERATE "Escalator" Mailorder system, selling our products or any products. Fastest, most revolutionary mailorder system known. Write: Selbyco, Decatur 172, Ill.

FOR as little as $8.00 you can put your ad here in the November issue. Get in on the winter season mail-order rush and deliver your sales talk direct to the 4,000,000 readers of Popular Science. Same low rate you've always paid—80c a word. The November issue closes on September 25th! Write today for order blank and free booklet. "How To Make Money Out of Classified Advertising." O. K. Kelly, Classified Advertising Manager, Popular Science Monthly Dept. B, 353 Fourth Avenue, New York 10, New York.

38 MONEYMAKING OPPORTUNITIES

21 POPCORN, Candy Apple Formulas, proven money-makers. Send $1 today for formulas, catalog of money-making ideas. Concession Supply, 3916 Secor, Toledo, O.

SPARETIME Profits Taking Subscriptions All Magazines. Wholesale Catalog Free. Cassell Publishers, Westfield 1, N. J.

BE Appointed State Notary Public Now! Details: Stationers, Helotes, Texas.

LEARN Watch-Clock Repairing at Home. While learning we fix all watches for you. Simplified technical books on all subjects of everyday usefulness: $1 each. Inquire. Modern Technical Supply Co., 55-PS, West 42nd Street, New York 36.

$10,800 PROFITS! Your own Mailorder Business! No Capital Risk! "Success Plan" (worth $2) Free! Write today! Treasury, 149 Storer, New Rochelle PS-3, New York.

MAKE Money—Sewing and Assembling at Home. Liebig Industries, Beaver Dam 7, Wisconsin.

$35 WEEKLY addressing envelopes. Instructions $1, refundable. Adservice, Spring Valley 36, New York.

595 MONEY making secrets. Send stamp. Book Service, P. O. Box 453, Port Chester, New York.

$100-$200 WEEKENDS no selling or manufacturing. Brennan, 4025-Y Lankershim, North Hollywood, Calif.

DETECTIVES Earn Big Money. Experience unnecessary. Detective Particulars free. Wagoner, P-125 West 86th, N. Y. 24.

CHANGE Nickels to Dimes. Complete outfit $1. Lincoln, 529 Main, Evanston 11, Illinois.

ADDRESS Envelopes! Immediate Commissions! Homework! Outfit 25c! Hirsch, Spring Valley 3, New York.

EARN 4½% non-fluctuating 3 months investments. 25c also brings 12% dividend list. Economist, Box 271, Summit, New Jersey.

PLEASURE and Profit Preserve live flowers to last for years. Details free. Trial size $1.00. Refundable. Hermansen, 210 Fifth Avenue, New York 10, N. Y., Suite 1102.

SELL Titania Gems $9.75 Carat. Wholesale. More brilliant than diamonds. Free catalogue. Diamonite, 1404S Mitchell, Oakland 7, Calif.

BE Self Employed—Details—Boyen, 51-56 48th Street, Woodside 77, New York.

SCHOOL Seniors—Earn sensational profits selling classmates America's Most Beautiful Graduation Name Cards. Largest selection. Outsells all others. Free sample kit. Printcraft, Dept. P, 1509 Maple Street, Scranton 5, Pa.

TYPEWRITER Owners make handsome profits. Get details today. Groves Company, 682, Hastings 3, Nebraska.

WIN contest money. General Contest Bulletin gives hundreds of tips. Lists current contests and rules. Sample 25c. General Contests, 1609-A East 5th, Duluth, Minnesota.

HOW to get your mail order advertising Free revealed by famous expert. Also other "Inside" secrets. Free details. Benson Barrett, 1751-B2 Morse, Chicago 26.

WORK at home. You sell nothing. For $3.00 we start you. Possible to make $191.00 in five hours daily. School children making up to $100.00 weekly. Send your order Now. John Rodakowski, Route 1, Box 79, Springfield, Oregon.

EARN Money Evenings, copying and duplicating comic cartoons for advertisers. Adservice, Argyle 2, Wisconsin.

$$$ IN Personalized Baby Record Books. Sell By Mail Use Same Literature We Do. No-Co-Ro, Oakland 6-P, Calif.

START a buying service, buy wholesale thousands nationally advertised products. Make big profits selling at sizable discounts. Send postcard for details. American Buyers' Service, 631-T Linden, Buffalo, New York.

FREE Book "505 Odd, Successful Businesses." Work Home! Expect something Odd! Pacific-35C, Oceanside, Calif.

MAKE Big Money at Home. Inexpensive. Box 475, Lomita, California.

SILK Screen Printing. Growing opportunities everywhere. Write Typecrafters, 510 West Susquehanna, Philadelphia 22, Pennsylvania.

WE pay you highest rates for hand-decorating greeting cards. Work home. Experience unnecessary. No selling required. Greetings, 100 Madison, Detroit 26.

MANUFACTURE Rhinestone and Pearl Jewelry at home. Latest creations, tremendous profits, no skill needed. Postcard brings illustrated catalog of settings, stones, etc. A. V. Cutt Co., Inc., 210-H Fifth Ave., New York 10, New York.

HELPFUL information. Sell by mail. 12 tested plans. 25c. Edwards, Box 1067, Allen Park, Michigan.

FOR as little as $8.00 you can put your ad here in the November issue. Get in on the winter season mail-order rush and deliver your sales talk direct to the 4,000,000 readers of Popular Science. Same low rate you've always paid—80c a word. The November issue closes on September 25th! Write today for order blank and free booklet. "How To Make Money Out of Classified Advertising." O. K. Kelly, Classified Advertising Manager, Popular Science Monthly Dept. B, 353 Fourth Avenue, New York 10, New York.

39 FORMULAS, PLANS, ETC.

FORMULAS—All kinds. Latest products. Literature free. Kemico, Park Ridge 15, Ill.

BRAND New, Spectacular Chemical and Fireworks Experiments Manual. Complete Set-ups. Instructions $1.00. Chemi-Technix Laboratories, 568M Riley Street, Buffalo 8, New York.

500 FORMULAS and Recipes. Riches in Recipes. Tried and Tested processes for home, Factory and workshop. 25c postpaid. Allen, 427-FS, Clinton, Missouri.

BOOK—10,000 Formulas, Processes. $3.98 Postpaid. Free literature. Kenneth Paullin, Loudonville, Ohio.

ONE tube loudspeaker radio diagrams 25c. Net-Loc, 44 Walker, Cambridge 38, Mass.

FOR the best in modern manufacturing formulas, get my literature! Established 1897. Liscombe Miller, Tampa, Florida.

FREE Formula Catalog anything analyzed $25. Western Chemical, Salem, Ore.

LABORATORY tested formulas. Lists free. Pont, Box 635-PS, Terre Haute, Ind.

40 PLASTICS

LUCITE, Plexiglas. Any size sheets masked Square foot (12 x 12) cost 1/16" $1.20; ⅛", $1.40; 3/16", $1.75; ¼", $2.08. Include 10% postage. Almac Plastics, 230 Fifth Avenue, New York 1, New York.

PLASTIC Sheets, Rods, Tubes, etc. Free List. Plastic Supply Co., 2901 N. Grand Blvd., St. Louis 7, Mo.

NEW liquid casting plastic. Clear, colors. Embed flowers, insects, coins. Saw, drill, carve. Send 25c for Wholesale Catalog and New Sales Manual showing how to make money at home. Castolite, Dept. K-102, Woodstock, Illinois.

HI-Profits-Gifts-Jewelry. Free Catalogue, details. Pilot Plastics, 67-A Fulton St., New York City 38.

Copyrighted material

10 LBS. Plexiglas for $5. Assorted sizes and thicknesses of clear and colored Plexiglas shipped express collect. Send $5 with order to world's largest plastic sign manufacturer. Neon Products, Inc., Lima, Ohio.

REINFORCED Plastics including miracle Fiber Glass. Send 25c for sample, information, and project lesson. Mardon Reinforced Plastics, Box 489, Glen Cove, N. Y.

PLASTICS. Lucite, Plexiglas, Acetates, complete supplies. Retail-wholesale prices. Catalog 10c. Gem-O'-Lite, Box 686N, North Hollywood, Calif.

LUCITE, Plexiglas, Jewelry Findings, Internal Carving, Fabricating. Free Lists Material and Supplies. Caraday, Box 71, Brooklyn 34, New York.

41 CHEMICALS & APPARATUS

LUMINOUS Paints will glow in dark. Six colors. Fairmount Chemical Co., 136 Liberty St., New York City 6.

NEW Idea Chemical and Apparatus Outfits for Home Experimenting. Photo-Scales, Microscopes, Chemicals, Biological and Laboratory Supplies in Small Quantities. Catalog 25c. Established 1931. John H. Winn, 124-B West 23rd Street, New York 11, N. Y.

AMATEUR Chemists—If you have your own lab, write for free copy of our monthly paper. The Amateur Chemist, Westwood, Lassen County, California.

ILLUSTRATED Catalog: Chemistry, mineralogy, biology. 10c. Tracey Laboratories, Evanston, Illinois.

SAVE Money! Supplies Catalog 20c, refundable. Laboratory Sales, Box 161-G, Brighton, Mass.

LABORATORY Apparatus, Chemicals, Microscopes, Complete Chemistry Sets, Minerals, Uranium Ore. 10c brings catalog. Porter Chemical Company, Hagerstown 2, Maryland.

BRAND New, Spectacular Chemical and Fireworks Experiments Manual. Complete Set-ups, Instructions $1.00. Chemi-Technix Laboratories, 568M Riley Street, Buffalo 8, New York.

CHEMICALS and apparatus for industrial, analytical, and private laboratories. Catalog 20c. Dept. M-26, Biological Supply Co., 1176 Mt. Hope Ave., Rochester 20, N.Y.

AMAZING New Book of Science. Experiments, Formulas and catalogue of Laboratory Supplies. Only 25c; National Scientific Co., Dept. 15, 2204 W. North Ave., Chicago 47, Illinois.

URANIUM Ore, Weighing Scale, Graduate, directions for 44 experiments, $1.00. Rex Laboratories, 2849-B Birchwood, Chicago 45, Illinois.

42 HELP WANTED

FOREIGN & Latin American Employment 1952 "Foreign Service Directory" gives Up-To-Minute Facts on Military & Civilian Construction, Government Jobs, Major Oil Listings, Aviation, Transportation, Steamship Lines, Mining, Importers, Exporters, How-When-Where to apply, application forms, Hot List Firms Hiring. $1.00 post-paid. Global Reports, P.O. Box 883-S, Hollywood 28, Calif.

FOREIGN Employment Construction men, building trades, helpers, office men, others, interested in Foreign Projects. High wages, quarters, transportation. Send $1 for Foreign Construction Compendium and Application Forms. Foreign Service Bureau, Dept. PS-9, Metuchen, New Jersey. (Not an employment Agency—no fees.)

$1,000,000 CONSTRUCTION Projects, "World Wide" printed Monthly Foreign & Domestic employment. Free application blanks tells How-When-Where to apply. $1.00 complete. Global Reports, P.O. Box 883-PX, Hollywood 28, California.

ALASKA—Last American Frontier. $1.00 brings 1952 Business Directory, Government Map, Construction Projects Military & Civilian, Homestead & Highway facts, Hunting-Fishing-Game Rules, Mining, Aviation. List of firms hiring. How-When-Where to apply. Alaska Opportunist, P. O. Box 883-S, Hollywood 28, California.

NEW Bathroom Deodorizer. Hangs on wall. Banishes odors bathroom, kitchen. Lightning seller. Samples sent on trial. Kristee 175, Akron, Ohio.

MEN, Women visit foreign countries on modern ships. Big pay, adventure, excitement. Experience unnecessary. Details Free. Davenport, 1170-B3 Broadway, New York 1, New York.

CALIFORNIA—There is a job waiting for you in California. Critical manpower shortage in Los Angeles area. All classification now open. Send $2.00. California Job Information Service, Box 556, North Hollywood, Calif.

OVERSEAS Jobs. Mechanical, clerical, professional workers, others interested overseas jobs. Big pay, transportation, expenses. Send $1.00 for "Overseas Jobs Brochure" and application forms. Overseas Jobs, Dept. 335-B1, Baton Rouge, La. (Not an employment agency—no fees.)

CONSTRUCTION Job List. Published Monthly. $1.00. Dempster's Construction Scout News, Dept. 268-DO, Bridgeport, Illinois.

BOOKKEEPERS earn $100.00 weekly operating simplified Bookkeeping-Tax Service. Details free. Universal, Box 664-P, Springfield, Missouri.

43 AGENTS WANTED

NEW Jobs open in selling! Send name, address for five free issues of Opportunity Magazine's money-making guide, listing hundreds of companies who'll pay you well, full or part-time. No experience needed. Opportunity, 28 E. Jackson, Dept. 18, Chicago 4, Illinois.

MAKE Wedding Profits. Sell invitations, napkins, matches. Samples free. Dunbar's, Middlebush 5, N. J.

PRINTING — Salesbooks — Envelopes. Free Illustrated Catalog—Ersco, Dept. S, Bronx 72, New York.

GOLD Lacquered and silver sign letters. Windows, doors, trucks. Standard Sizes. Penny and up. Samples. Atlas-G, 544 West 79th, Chicago 20.

START Your Own Business on credit. Your own boss. 1586 of our Dealers sold $5,000 to $27,500 in 1951. We supply stocks, equipment on credit. 200 home necessities. Sales experience unnecessary. Pleasant, profitable business backed by world-wide industry. Write Rawleighs, Dept. I-U-PSC, Freeport, Ill.

AGENTS—300% profit selling genuine gold window letters: stores and offices. Free samples. Metallic Sign Letter Co., 431-E North Clark, Chicago.

JUST Out! New Thrilling Sensation in Christmas Cards. Make Big Money! Show Lustre Foils, Satins, Brilliants. Amazing Values bring Easy Orders! Magic Glo-In-The-Dark Ornaments, Personalized Stationery, Matches. 30 Free Samples. With Name 50 for $1.25. Several $1.00 Boxes on Approval. Joy Greetings, 507 N. Cardinal, Dept. 61-C, St. Louis, Mo.

CASH in on your spare time! Sell beautiful new Regal Christmas Greeting Cards and Gift Assortments. No experience necessary. Costs nothing to get started. Show wonderful samples to friends, relatives, neighbors. Merely take orders and pocket up to 100% profit. Write today for samples on approval. Regal Greetings, Dept. 104, Ferndale, Michigan.

DO You Need Money? $35.00 is yours for selling only 50 boxes of our 300 Christmas Card line. This can be done in a single day. Free samples. Other leading boxes on approval. Many surprise items. Experience unnecessary. Free samples Personalized Christmas Cards, Stationery, Napkins. Write today. It costs you nothing to try. Cheerful Card Co., 10 White Plains, New York.

AT Last! Something New and Sensational in Christmas Cards. Make Extra Money Fast! Show Satins, Velours, Metallics. Gets Easy Orders. Pays up to 100% Cash Profit. 30 Free Samples. With Name 50 for $1.25. Big Line. Amazing new Glo-In-The-Dark Ornaments, Personalized Matches, Stationery. Several $1.00 Boxes on Approval. Puro Greetings, 2801 Locust, Dept. 241-L, St. Louis, Mo.

FAST sellers. Big demand. Catalog. Parker Drug Co., Hoboken 6, New Jersey.

FREE Book where to buy 800,000 articles from manufacturers at Wholesale Prices. Save up to 50% on Nationally Advertised Merchandise. Rush name for Free copy. Glass Pub. Co., Ellwood City 1, Penna.

MAKE Money Introducing World's cutest children's dresses. Big selection adorable styles. Low prices. Complete display free. Rush name. Harford, Dept. H-3341, Cincinnati 25, Ohio.

SHINE Shoes Without "Polish." New invention. Lightning seller. Shoes gleam like mirror. Samples sent on trial. Kristee 150, Akron, Ohio.

CALL On Friends with sensational Christmas Cards in handy assortments. Price, $1.00. Profit up to 50c. Also popular-priced Personal Christmas Cards, Everyday Assortments, etc. Samples on approval. Wallace Brown, Dept. R-4, New York 10, N. Y.

NEED Money. $50.00 Yours. Sell only 100 boxes New Xmas Cards. Other amazing offers. Free samples imprinted cards. Feature box assortments on approval; over 100 profitable items. Work with a national leader. Pen-'N-Brush, Dept. PS-9, 139 Duane St., New York City 13.

AMAZING Big Profits Selling Exclusive Sunshine Christmas Cards. Nationally famous 21 for $1.00 assortment is unequalled, sells on sight. Other tremendous Sunshine Values: Merry Holly-Day, Nature Prints, Park Avenue Kromekotes, Scripture Text, Gift Wraps, Stationery, etc. Send for Samples on Approval. Earn Big Money Now! Sunshine Art Studios, Dept. PO-9, Springfield 1, Mass.

BIG Bargains! Terrific Profits! Selling new-used Clothing. Suits $1.75, Pants 35c, Topcoats $1.00, Dresses 20c, Shoes 20c. As little as $10 starts you. No experience necessary. Free Wholesale Catalog. Superior, 1250-B Jefferson, Chicago 7.

QUICK Extra Cash! Sell America's outstanding line of Christmas box assortments and personalized lines . . . Plus hundreds of extra profit items. Monogram playing cards, wedding invitations, gift items, deluxe album of exclusive cards, nylon hosiery. Write today for 60 free samples in six beautiful portfolios. Gift catalog included. Elmcraft Chicago, Dept. 9, 5930 So. Western Ave., Chicago 36, Ill.

I'LL put a "Shoe Store Business" in your pocket! Nation's Leader trains you to make Big Money! Fit men, women. Free Sample Outfit—Write Today! Mason Shoe Co., Dept. MA-14, Chippewa Falls, Wis.

CALIFORNIA sweet smelling beads, sensational sellers. Particulars free. Mission, 2328P West Pico, Los Angeles 6, Calif.

NEED Extra Cash? Free Sales Kit. Sell personal initialed buckles with belts, cap badges, tie clasps etc. Choose from 3000 emblems. Hook-Fast, Box 1425PS, Providence, Rhode Island.

ANYONE can sell Hoover DuPont Nylon Uniforms for beauty shops, waitresses, doctors, nurses, others. In white and collors. Exclusive styles. Top quality. Low priced. Exceptional income. Real future. Equipment free. Write fully. Hoover, Dept. E-101, New York 11, N. Y.

GET Into Million Dollar Work Clothes Business. Earn big money now, unlimited future! Sell finest-quality embroidered uniforms and work clothes to factories, garages, everybody! Huge profits possible. No experience needed. Gorgeous selling kit, actual fabric samples, including miracle Orlon! Everything Free! Write Topps, Dept. 549, Rochester, Indiana.

PHOTO-Salesmen-Agents. Sell beautiful hand colored plastic enlargements and sensational new photo compacts, rings, bracelets, lockets etc. Collect deposit, we deliver. Profitable sideline. Send card for Free sample kit. Novel Portrait Co., 3343-A North Ave., Chicago, Ill.

MAKE big money—season starting—sell 1953 calendars advertising specialties and executive gift line. Experience unnecessary. Commissions advanced. Outfit Free. North American Calendar, 605-AB Washington, Chicago 6.

WOMEN! Men! Make extra money in your spare time. No house-to-house canvassing required. New car given as bonus. Amazing nylons guaranteed as long as 9 months depending on quantity, against runs, snags, holes, or replaced free. Rush name and hose size for simple money making plan. Lowell Wilkin, 2029 Wash., Greenfield, Ohio.

Copyrighted material

SALESMEN. Distributors, fast selling costume jewelry direct from factory. Big picture catalog free. Pickcraft, C-19 Bank, Attleboro, Massachusetts.

MEN-Women. We pay $25.00 cash bonus to match every $25.00 you earn in commissions on beautiful fast-selling nylons. Essential Products Co., 210 Fifth Avenue, New York 10, N. Y.

WANT to make real money? You can positively make $50.00 a day and up selling a brand new item going to every type of Food and Beverage Store, Factories, Laboratories, Hospitals, etc. First time advertised. Samples furnished. Utility Durawear, 53 West Jackson Blvd., Dept. PS-9, Chicago 4, Illinois.

SELL friends amazing value Christmas. All occasions greeting cards, new type gift wrappings, gifts that are different. Make up to $1.00 a box. Bonus. Experience unnecessary. Request Feature samples on approval and free samples Name Imprinted Christmas Cards, Stationery, Napkins. New England Art Publishers, North Abington 719-B, Mass.

BIG profits selling ties ($2.00 values) $6.50 dozen. Free catalog. Empire Cravats, 648A Broadway, New York 12.

BE A Money Maker . . . Represent magazines year around. Wonderful home work. Big Christmas profits now. Liberal commissions. Everything furnished. Write for Free Catalog. McGregor Magazine Agency Dept. 510A, Mount Morris, Illinois.

VALUES Galore—100 blades 45c. Gross needlebooks $4.80. Automatic cigarette lighters $7.20 dozen. Fullsize 25c Ball Pens $8.40 gross. Bargain Catalog 5001 items free. Cutrate Wholesalers since 1916. Mills Sales Co. 26 West 23rd St., New York.

NEW Plastic Mending Tape. Just press on! Repairs clothing instantly. Lightning seller. Samples sent on trial. Kristee 152, Akron, Ohio.

TAKE Large Unit Orders for Wool Uniforms, Caps, Shirts, Ties, Wallets, Personal Initialed Buckles With Belts, Cap Badges, 3000 Emblems. Send For Free Outfit Now! Hook-Fast Co., Dept. PS, Roanoke, Virginia.

CHRISTMAS Card Money-Makers! Everybody wants new 25 for $1.50 Gold-Name Cards. Cash in big. 161 fast-sellers. Profits to 100% on $1 boxes; Gift Bonuses. 4 assortments on approval; Imprints Free. Creative Cards, 2505 Cermak, Dept. 116-C, Chicago.

$1 STARTS you in business. Sell fine $1 ties. $1.50 and up values only $7.20 dozen, you make $4.80. Send only $1 for 2 sample ties. Catalog free. Philip's Neckwear, Dept. 948, 20 West 22nd Street, New York 10.

SELL finest nylon hosiery Guaranteed against everything, snags, runs, holes. Demonstration kit Free to you with actual sample stocking. American Mills, Dept. 401, Indianapolis.

SELL Big Money-Maker to Men and Women. Easy handwork makes fast-selling useful articles. Sample free. Sunmade Company, Brockton 64, Mass.

ABSOLUTELY Free! Big package actual sample fabrics and style presentation of dresses, lingerie, hosiery, etc. Take orders. Commission big. Send no money. Melville Co., Dept. 7553, Cincinnati 25, Ohio.

IS $210 a week worth a postcard to you? Then rush card with name and address for special Free Trial Plan that sells amazing new Automatic Refrigerator Defroster "like hot cakes!" Write to Mr. Lewis, D-Frost-O-Matic Corp., Dept. M-103, 173 W. Madison, Chicago 2, Illinois.

HOT Special. Power Mower—$36.00. County Agency, Rotacut-RP, Excelsior Springs, Mo.

BIG Profits In Spare Time! Ambitious Men-Women who need money . . . get Assortment Full-Size Samples fine Foods, Household Necessities. Friends, neighbors buy eagerly. Send for Free details. Just write Blair, Dept. 55HS, Lynchburg, Va.

BUY Wholesale thousands nationally advertised products at big discount. Sent free "The Wholesale Plan." American Buyers' Service, 627-T, Linden, Buffalo, N. Y.

FREE book "505 Odd, Successful Businesses." Work Home! Expect something Odd! Pacific-38C, Oceanside, Calif.

NAMEPLATES for Homes, Banks, etc., free sample. Carl Whitney, West Springfield, Mass.

MAN To Earn $90 Week Up. Long needed invention. Advertised Post, Colliers, Country Gentleman. Prospects everywhere. Full or part time. Exclusive. No investment. Free Samples. Write Red Comet, Inc., Dept. 33-C, Littleton, Colorado.

MEXICAN Feather Pictures. Sell on sight; 200% profit! Free details. Sample 20c stamps. (No Coins). Sylvias, Apartado 9036, Mexico City.

LIQUI-Moly makes motor oil 300% more efficient—agents wanted. Hal-Gas Auto Products, Fonda, New York.

44 HIGH-GRADE SALESMEN

MAKE Money with fast-selling Bostonian Skirts, Blouses too. Spare time, full time. Sales Kit Free. Bostonian, 89 Bickford, Dept. R-11, Boston 30, Mass.

ADVERTISING book matches—Cash in on big demand—sell Union Label matches. Cuts for all businesses and political parties—Free powerhouse selling kit—low prices—protection guaranteed on repeat orders—Cash commissions. Superior Match Co., Dept. P-952, 7530 Greenwood, Chicago.

ALUMINUM Awnings big profits, details free. Sci Kramer, 321 So. Anita, Los Angeles 49, Calif.

AD Matches! Sell Amazing Designs—20, 30, 40 and 240-light book matches. Biggest spot cash commissions; every business a prospect. Low prices for high quality. Repeats. Start without experience; men, women; full, part time. Buy Nothing! Sales kit furnished. Match Corp., Dept. PS-33, Chicago 32, Illinois.

WRITE 3 Words—Collect $7.65 on 10-second Demonstration to merchants—write on glass with Amazing Magic Crayon—Presto!—5-color advertising message takes fire—glows like brilliant Neon. Three sales daily bring $22.95 profit. Rush postcard for details.—Complete Sales Kit Free. Maxilume Co., 125 W. Hubbard Dept. CL-9-P, Chicago 10, Illinois.

45 EDUCATIONAL & INSTRUCTION

INCREDIBLE! Unprecedented! Look under "Personal"! Bijou, Box 1727-VW, Hollywood 28, California.

LEARN Piano Tuning, Repairing—at home in 30 days. Unlimited income. Phonograph recordings, tools and instructions furnished. Write Capitol City Tuning School, Department C-933, 129 East Michigan, Lansing 16, Michigan.

USED Correspondence Courses and Books sold and rented. Money back guarantee. Catalog free. (Courses Bought.) Lee Mountain, Pisgah, Alabama.

HIGH School—No Classes. Study at home. Spare time. Diploma awarded. Write for Free catalog. HBA-16, Wayne School, 2527 N. Sheffield, Chicago 14, Ill.

WANT A Diesel Job? New Opportunities to increase income. Higher Pay. More Money. We can help you Qualify. Tools. Shop method home training. Write today! Diesel, Tractor, Heavy Equipment Division, Interstate Training Service, Dept. 2-J, Portland 13, Oregon.

PIANO Tuning Pays. Learn this profitable profession at home. Our Tonometer and mechanical aids make learning easy. No knowledge music necessary. Diploma granted. Largest and oldest school—51st year. G. I. Approved. Write for booklet. Niles Bryant School, 77 Bryant Bldg., Washington 16, D. C.

BE A Real Estate Broker. Study at home or in classrooms in leading cities. Write for big illustrated free book today. Weaver School of Real Estate, Suite 301 Law Bldg., Kansas City, Mo.

THE Collection Agency business is one of finest opportunities today. Write G. H. Cole, Syracuse 2, New York, for free folder.

FREE Locksmithing Course. W. Thompson, 1737 Long Avenue, Lorain, Ohio.

BECOME a Doctor of Psychology or Metaphysics. Learn secret of contentment, happiness. Win degree of PsD. or MsD. Solve mental worries. Free book. College of Universal Truth, 5153-K N. Clark, Chicago.

MEDICAL Laboratory Technicians in great demand. We train you in your own home. Catalogue free. Imperial Technical Institute, Box 973-B, Austin, Texas.

DIE? Suffer? Look under "Personal"! Bijou, Box V5-1727, Hollywood 28, Calif.

WELDING training pays at Hobart Welding School. Box P-922, Troy, Ohio. VA Contract. Best equipment. Catalog Free.

"SUPER-Dianetics." Advanced Mind-Power techniques. Free Information. Psychology Associates, 673 South Coronado Street, Dept. A, Los Angeles 5, Calif.

PRACTICAL Nursing—Learn Easily at Home. Spare Time. Big Demand, good earnings. High School not necessary. Write for free facts. Wayne School, Dept. FH-9, 2525 Sheffield, Chicago 14, Ill.

BECOME AN Accountant. No previous bookkeeping experience required. We train you at home spare time, low cost. Ask for free booklet, "Accounting, the Profession That Pays." LaSalle Extension University, a correspondence institution, 417 South Dearborn Street, Department H975, Chicago 5, Illinois.

WRITE slanted short stories for extra pay in spare time. Your name and address brings full details and Free Trial training offer. Croydon Schools, 1543 North Larrabee, Chicago 10.

ANNOUNCING home study course in commercial baking: Practical basic training. Good field for those with aptitude. Nearly depression proof. Send for Free booklet, "Opportunities in the Baking Industry." National Baking School, 835 Diversey Parkway, Dept. 1726, Chicago 14, Ill.

USED Correspondence Courses and Educational Books Bought, Sold, Rented. Catalog Free. Educational Exchange, Summerville, Georgia.

READING Courses and Books. "The Mysteries." Self-Unfoldment, Yoga, Metaphysical Philosophy, Theosophy. Catalog free. Jordan's, 1130 Keller Avenue, Louisville 13, Kentucky.

WAKE up unused winning ability with new "Human Behavior Control" plan. Users praise it. Request amazing free lecture today. No obligation. Personal Psychology, Inc., Box 1924-S, Louisville 1, Ky.

EARN Extra Pay writing short stories in spare time. "101 Technical Pointers for Fiction Writer" shows you how to write and where to sell. Send $1.00 today for 28 big pages of proved instruction. Money-back guarantee. Gavin Gray, 1543 North Larrabee, Chicago 10.

BOOKKEEPERS! Increase your earnings! Operate your own simplified "Dollar-A-Week" Bookkeeping and Tax Service. Full or spare time. Details Free. No obligation. Ellis, Box 203-J, Cedar Grove, N. C.

HYPNOTISM—Homestudy! Diploma! Hypnology Institute, 235 S. Brevard, Charlotte, North Carolina.

HYPNOTISM. Sample lesson Free! Write Baltimore School of Hypnotism, Dept. 209A, 4214 Belmar Avenue, Baltimore 6, Md.

BARTENDING and management. American Bartending School, P-334 S. Wabash, Chicago, Illinois.

STENOGRAPHERS—Thousands needed Now. Learn Triplespeed NUABC Shorthand. Join Self-study Club. Earn Course. Capital City College, Dept. PS, Washington 5, D.C.

FOR as little as $8.00 you can put your ad here in the November issue. Get in on the winter season mail-order rush and deliver your sales talk direct to the 4,000,000 readers of Popular Science. Same low rate you've always paid—80c a word. The November issue closes on September 25th! Write today for order blank and free booklet, "How To Make Money Out of Classified Advertising." O. K. Kelly, Classified Advertising Manager, Popular Science Monthly, Dept. B, 353 Fourth Avenue, New York 10, New York.

Copyrighted material

$30 AN Hour preparing Income Tax Returns. Experience unnecessary. Details free. Union Institute. Lakewood 1. N. J.

HOW Rich Men Get That Way. Write Morley Publishing Company, 425 43rd Street. Sarasota. Florida.

HYPNOTISM. complete course. 25 lessons $1.00. Erickson, 250 McLaughlin, Muskegon, Michigan.

46 CONTESTS

TIE-Breaker picture puzzles exposed. $2.00. Wenograd, Box 1495, Philadelphia 5, Penna.

47 DETECTIVES

DETECTIVE Training. Phillips Secret Service System, 1917-C North Kenneth, Chicago 39, Ill.

DETECTIVES—Work home—Travel. Experience unnecessary. Detective Particulars free. Write. Wagoner. P-125 West 86th. New York 24.

INVESTIGATE. Be our Associate, we train, Diplomas Awarded. Details 25c. Virginia Detective Agency. Hampton, Va.

48 LANGUAGE OUTFITS

LISTEN—Learn a language by Linguaphone. At home, quickly easily, correctly master Spanish, French, German, Russian, Japanese—any of 29 languages, through Linguaphone Conversational Method. Add to service, job, travel opportunities. Send for Free book. Approved for Veterans' Training. Linguaphone Institute, 8309 Radio City, New York City.

50 BUSINESS SERVICE, INFORMATION, NAME LISTS

INFORMATION Most any subject. Reasonable. Research. 1205 West Spfld., Urbana, Illinois.

MAILING Lists. All kinds 1000 $5.00. Dixie Service, King, N. Carolina.

51 SPECIAL SERVICES

NEW York City Postmark. Letters remailed quarter. Dollar brings eight scenic postcards. Remailed free. E. Howard, Box 202, Yonkers 2, New York.

52 AUTHORS SERVICE

LOOKING For A Publisher? Write for free booklet PS-9. Vantage Press, 120 West 31st., New York 1.

I Want New Writers to cash checks of $1 to $100 offered daily. The easiest way to write for pay. No previous experience necessary. Free Details. Saunders M. Cummings. 468-15 Independence Bldg., Colorado Springs, Colorado.

BEGINNING Writers: Let us show you How to get $1 to $20 checks in your daily mail doing simple spare time writing. Experience unnecessary. Details Free. W. Herwell. 7016 Euclid. Cleveland 3. Ohio.

53 ADVERTISING

ADVERTISE: 24 words, 100 Canadian Newspapers, $5.50. Lists Free. Advertising Bureau, 10511-P Springfield, Chicago 43.

LEARN Advertising by practicing in spare time. Amazingly simple, short-cut method. No tiresome textbooks. Send for Free Aptitude test. Dawson System. Box P-161, Lyndon, Kentucky.

54 CARTOONING, SIGN PAINTING, CHALK TALKS

"HOW To Make Money With Simple Cartoons"—A book everyone who likes to draw should have. It is free; no obligation. Simply address Cartoonists' Exchange, Dept. 199-C, Pleasant Hill, Ohio.

LEARN Sign Painting at Home. Test Lesson Free. Ben Kerns, Box 812-PS, Greenville, South Carolina.

"CARTOONING For Profit" Complete course. Market Guide $1.00 PPD. Kirk's Art Exchange, Dept. 10D, 2821 Idalia, El Paso, Texas.

CHALK Talks, Laugh Producing Program, $1.00. Illustrated Catalog 10c. Cartoonist Balda, Oshkosh, Wisconsin.

FREE copy. Cash buyers Galore! "Cartoonists' Market Letter", La Habra, Calif.

55 TYPEWRITERS & OFFICE MACHINES

TYPEWRITERS $22.50. Adders. Duplicators $12.95. Typewritery, 118 Spruce, Wichita 7, Kansas.

TYPEWRITERS, Printing Devices, Office Machines supplies appliances. Dixie Graph, King, N. Carolina.

VARI-Typers, reconditioned electric typewriters $100—Sachs, 119 West 23rd, New York 11. Dept. P.

56 RUBBER STAMPS & OFFICE SUPPLIES

BETTER Stamps! 3 lines, $1.00; Line, 40c. Catalogue. Johnson Press, Box 6-B, New York City 26.

57 PRINTING, MULTIGRAPHING, ETC.

PRINTING—Lowest prices. Free samples. Weeks, 342 Woodycrest, Nashville 11, Tenn.

FINE Printing—Prompt service—Wide selection modern type styles, colors, cuts. Free samples, prices. Wilcox, Nicholls, Ga.

DISTINCTIVE Printing, free samples, prices. McDonald, 545 North Oakland, Pasadena 4, California.

1,000 BUSINESS cards $2.35. Prepaid. Other printing. W. Dornfeld, Iron Ridge 6, Wisconsin.

8½x11 LETTERHEADS. 1000—$4.00. Convincing samples. D'Yarmett Service, Newark, Ohio.

1000 BUSINESS Cards $2.50 Prepaid samples Free. Reliable Print Shop, 907 East Jefferson, Louisville 6, Ky.

BUSINESS Printing. Free samples, prices. Sutton Printing, Box 853-S, Waycross, Georgia.

100 8½x11 LETTERHEADS $1.00 Postpaid. Envelopes same. Race Printing, Hudson, New York.

PHOTOENGRAVINGS at about ½ the standard scale. Send for free price list. Billings, Box 4951, Los Angeles 1, Calif.

100 8½x11 HAMMERMILL Letterheads and 100 envelopes $1.95 postpaid. Herbert Hudson, Centredale, Rhode Island.

200 LETTERS mimeographed on printed letterheads 8½x11 only $2.00; 500 $4.25; 1,000 $6.10. Ross S. Weygandt, Box 313P, Wooster, Ohio.

58 PRINTING OUTFITS, SUPPLIES

PRINTING Methods for Beginners, 160 pages, illustrated. Frank Hale, 64 Tonnele Avenue, Jersey City, New Jersey.

PRINT your own cards, stationery, circulars, advertising. Save money. Simple rules. Print for others, nice profit. Raised printing like engraving too. Have home shop. Details free. Kelsey Presses, L-8, Meriden, Connecticut.

PRESSES, Supplies, Paper catalog 10c. Custom. Box 211-S, Springfield, Missouri.

MAKE your own, self-molding, rubber printing cuts. Plexirubber, Argyle 2, Wisc.

PRINTING Presses, Type Supplies, Lists 3c. Turnbaugh Service, Loysville, Penna.

59 PATENT ATTORNEYS

INVENTORS: Without obligation, write for information explaining the steps you should take to secure a Patent. John N. Randolph, Registered Patent Attorney, 207 Columbian Bldg., Washington 1, D. C.

C. A. Snow & Co.—S-427, Snow Building, Washington 1, D. C. Registered Patent Attorneys. Write for information.

INVENTORS: Learn how to protect your invention. "Patent Guide" containing detailed information concerning patent protection and procedure together with "Record of Invention" form will be promptly forwarded to you upon request—without obligation. We are registered to practice before the U. S. Patent Office and prepared to serve you in the handling of your patent matters. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 22B-G District National Building, Washington, D. C.

INVENTORS. For "Invention Record" form, contact Carl Miller, Registered Patent Attorney, Woolworth Building, New York.

INVENTORS: When you are satisfied that you have invented something of value write me, without obligation, for information as to what steps you should take to secure a Patent. Write Patrick D. Beavers, Registered Patent Atty., 938 Columbian Bldg., Washington 1, D. C.

INVENTORS—If you believe you have an invention, we can make a preliminary search on your invention and advise you whether we think it can be patented. Send for copy of our Patent Booklet "How to Protect Your Invention" and "Invention Record" form. No obligation. McMorrow, Berman & Davidson, Registered Patent Attorneys, 143-V Victor Building, Washington 1, D. C.

"INVENTOR'S Guide" free. Frank B. Ledermann, Registered Patent Attorney, 154 Nassau Street, New York.

INVENTORS—Send today for booklet "Patent Protection for Inventors" giving detailed patent information and preliminary steps to take toward patent protection.—also "Evidence of Invention" form. Victor J. Evans & Co., 741-K Merlin Building, Washington 6, D. C.

PATENTS—Irving L. McCathran, 316 McLachlen Bldg., Washington 1, D. C. Registered Patent Attorney.

60 FOR INVENTORS

SEARCHES—Put your patent searches in the hands of a Registered Patent Attorney or Agent, as he qualifies to give a worthwhile patentability report. Record of Invention form upon request and information on patent protection. Patrick D. Beavers, Registered Patent Attorney, 939 Columbian Bldg., Washington 1, D. C.

INVENTORS. For "Invention Record" form, contact Carl Miller, Registered Patent Attorney, Woolworth Building, N. Y.

INVENTORS: Without obligation, write for information explaining the steps you should take to secure a Patent on your invention. John N. Randolph, Registered Patent Attorney, 206 Columbian Bldg., Washington 1, D. C.

INVENTORS: Learn how to protect your invention. "Patent Guide" containing detailed information concerning patent protection and procedure together with "Record of Invention" form will be promptly forwarded to you upon request—without obligation. We are registered to practice before the U. S. Patent Office and prepared to serve you in the handling of your patent matters. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 22A-G District National Building, Washington, D. C.

INVENTORS: If you have an invention for sale, patented or unpatented, write Institute of American Inventors, Dept. 30A, 631-E St., N.W., Washington 6, D. C.

INVENTORS! For "Copyright, Design & Patent Guide" contact Mr. Metzlerr, 11 West 42nd, New York 18

INVENTORS—If you believe you have an invention, we can make a preliminary search on your invention and advise you whether we think it can be patented. Send for copy of our Patent Booklet "How to Protect Your Invention" and "Invention Record" form. No obligation. McMorrow, Berman & Davidson, Registered Patent Attorneys, 143-T Victor Building, Washington 1, D. C.

INVENTIONS Sold—hundreds of manufacturers need ideas, patented or unpatented, list free. Invention Bureau, 208-S Clinton, Oak Park, Illinois.

PATENT Searches, $5.00, including patent copies. Same reliable search as conducted for patent attorneys. Free protection forms, 48 hour service. Patent Service Institute, 945-B Pennsylvania Avenue, Washington 4, D. C.

DO you want to make money? Techniques and principles are described in booklet "Inventing As A Profitable Enterprise". $1.00. In Re Publications, 4627 Verplanck Place N.W., Washington 16, D.C.

INVENTORS—We want to manufacture patented items made of cardboard or paperboard. Royalty basis. Write Box 1291, Dallas, Texas.

Copyrighted material

PATENT searches $5.00, including patent copies. 48 Hour Airmail service. "Record of Invention" free. Same careful, reliable searches conducted for patent attorneys. Capitol Patent Service, Box 664-S, Washington 4, D.C.

INVENTIONS Promoted, Patented or Unpatented. Established 1911. Write Adam Fisher Company, 183 Enright, St. Louis, Mo.

INVENTORS—If you have worthwhile invention, sell it direct to manufacturer. Keep all profits. Without obligation write National Patent Sales Co., Dept. J, Box 370, Richmond, Virginia.

ATTENTION: Young men under twenty interested in a career of free-lance inventing. We have employment opportunities for select applicants. Write your interest and qualifications to the Farnsworth Invention Research Co., P. O. Box 871, Milwaukee, Wisconsin.

INVENTORS—If you consider your invention to be something of importance, take steps to protect it with a United States Patent which gives you the right to exclude others from making, using and selling your invention as claimed. "Patent Protection for Inventors" outlines steps to take to secure patent protection. Mailed promptly without obligation. Victor J. Evans & Co., Merlin M. Evans, Registered Patent Attorney, 742-K Merlin Building, Washington 6, D. C.

PATENT Searches $5.00, 48-hour service. Patent Applications and Drawings prepared. Protection forms free. Write Miss Ann Hastings P. O. Box 176, Washington 4 D. C.

BE Safe: Get temporary protection (not a patent) on your idea. Cost $2.75. Free information. Box 113, Cedarburg, Wisc.

61 INVENTIONS WANTED

INVENTIONS Promoted, Patented or Unpatented. Established 1911. Write Adam Fisher Company, 183 Enright, St. Louis, Mo.

SCHAULAT Associates. Agents, purchasing and marketing inventions. 1110 Brentwood Blvd. St. Louis, Missouri.

INVENTORS: Hundreds of manufacturers have requested our assistance in locating marketable new products. Complete information, free. Institute of American Inventors, Dept. 30C, 631—E Street, N.W., Washington 4, D. C.

WRITE for information about service for selling inventions. Patent Engineering Development Co. 624 Southern Standard Building Houston, Texas.

MARKETING Aid—Nation Wide. Patented, patent pending. Booklet free. Market Contacts, 719-B2, Magnolia, Tupelo, Mississippi.

PROTECT and sell your inventions. Details of our unique 4-point program and list of needed inventions free. Inventors Sales, 208T Clinton, Oak Park, Illinois.

INVENTIONS Wanted. Patented or Patent Pending. 21 years experience Promoting Inventions. National Service Bureau, 3122 Meramec, St. Louis 18, Mo.

INVENTIONS Wanted. Patented or unpatented. Free details. Tremendous manufacturer's lists. Global Marketing Service, 1404 Mitchell Street, Oakland 1, Calif.

INVENTIONS Wanted. Patented, Pending only. Inventors Patent Exchange, Hartford 1, Conn.

MANUFACTURER wants new products! Will finance, engineer and sell qualified products of merit. Aristo-Craft Metal Products Company, 2429 N. Avon, Burbank, Calif.

64 MODELS, MODEL SUPPLIES

SHIP and Yacht model fittings: blueprints. Send 25c for illustrated catalog No. 27—Listing hundreds of items. A. J. Fisher, 1002-2 Etowah, Royal Oak, Mich.

SHIP Model and yacht supplies, complete large 64 page catalogue, 30c. Wm. Wild, 510 E. 11th St., New York City.

WORLD'S Finest Illustrated Catalog-Handbooks. Railroads 84 pages 35c. Airplanes, Boats, Crafts, Hobbies, Tools 60 pages 25c. No Stamps. Print Name. E and H Model Hobbies, Room 80, 130 W. Chelten Avenue, Philadelphia 44.

BUILD miniature homes with our accurately-scaled materials. Send 25c for booklet and samples. Architectural Model Materials Inc., Dept. S92, 4208 Armitage Avenue, Chicago 39.

65 HOME CRAFTSMAN

LEATHER tools, lacing, supplies. Free Catalog. National Handicraft, 199 William St., New York 7.

OUR biggest Leather and Craft Catalog yet! 1000's of items. Send 25c (refunded with 1st order). Russo Handicraft Supplies, Dept. 90 245 S. Spring, Los Angeles, California.

90 ALL new, full size lawn ornament and novelty patterns, up to 20" high. Only $1.00. Mastercraft 92S, 7041 Olcott, Chicago 31, Illinois.

"PRACTICAL Painting, Wood Finishing" shows how to get professional results. Furniture finishing, workshop projects, home decorating. Complete Modern brush and spray methods. Tricks you've never seen. Write Home Craftsman, 115-F Worth St., N. Y. 13.

LEATHERCRAFT, Copper Tooling, Textile Painting, Beadcraft, Shellcraft. Many other crafts. Big Free catalog shows everything you need. Kit Kraft, 7373 Melrose, Hollywood 46, Calif.

89 FULL size Jig Saw patterns of beautiful shelves, ornaments, toys, novelties. Plus "How, Where to Sell." Only $1.00. Mastercraft 94S, 7041 Olcott, Chicago 31, Ill.

VIOLIN Making—the most rewarding hobby. Fascinating pamphlet 30c. Luthier, GPO Box 1500, New York 1, N. Y.

VIOLINMAKERS. Amateurs, Professionals. Fine tone European wood, materials, supplies, instructions. Tools. Patterns. Illustrated catalogue 10c, refunded. Premier Violin Supplies, Dept. VPS, 430 South Broadway, Los Angeles 13, California.

LEATHERCRAFT. Everything needed by beginners, advanced hobbyists and professional leatherworkers. Largest stock of supplies in U. S. Moderate-priced tooling leathers, top-quality calfskins, tools, supplies, kits. Send 10c for Big Catalog. J. C. Larson Co., 820 S. Tripp, Dept. 2454, Chicago 24, Illinois.

PARATOL Supreme "706-G" Molder . . . newly developed compound. The toughest rubber ever made for molding purposes. Supreme molds, precision reproductions, double strength. For the operator who wants the finest. Direct to consumer prices: $2.75 per quart, one-gallon cans, $8.00; 5 gallon cans $7.75 per gallon. 4 ounce samples 50c to cover mail handling. U.S.A. only. Testworth Products Corp., Dept. H, P.O. Box 482, Itasca, Illinois.

CLEANEST fine white Wiping Waste big Five Pound box $3.00, postpaid, satisfaction guaranteed. Abbeon Supply, 179-25 Jamaica Avenue, Jamaica 32, New York.

ATOMIC Saw. Fits ¼" drill motor. 6" blade cuts 2x4 without turning. Information. Willard's, Canoga Park 82, California.

LEATHERCRAFT. New Stylecraft folder Free. New Kits illustrated. Filigree Belts, Billfolds, Purses, etc. Send 25c new catalog. Refunded first order. Apache Leather Co., 2804 East Washington St., Phoenix, Arizona.

JIG Saw owners—tired of old ideas? See our unique patterns. Sample and illustrated folder 10c. Walker Studio, PS9, 4343 Lindell, St. Louis 8, Missouri.

WAX Candles formulae write for prices. American Wax & Supply Co., 2422 Hutchinson, Chicago 18, Illinois.

LEATHERCRAFTERS: Big illustrated catalog of materials, tools, kits, 10c. Art's Leather, 411 Joseph Ave., Rochester 5, New York.

SQUAREKNOTTERS: Make belts, handbags, lanyards, dog leashes, etc. Special offer! Beginner's book, catalog and quality cord samples 15c. P. C. Herwig Co., Dept. P41, 121 Sands St., Brooklyn 1, New York.

LEATHERCRAFT Tools. Leather Embossing Plates. Craft Accessories. Dies. Catalogue 10c. Louis Jones Engineering Company, 1613 Main, Fort Worth, Texas.

JEWELRY Findings, Chain, Earrings, Pins, Catches, miscellaneous supplies. Plastics, Internal Carving. Free Lists. Caraday, Box 71, Brooklyn 34, N. Y.

PATTERNS for terrace chair, coffee table end table—all for $1.00. M. Cox, Box 230, Springdale, Arkansas.

66 BUILD IT YOURSELF

BUILD Your Own "Tractor". Free information. Eltraco D-5, Camptonville, Calif.

SEND for big, new 1952 illustrated catalog that will show you how to turn your spare time into cash—making quick-selling, highly profitable lamps. Every home a prospect. Hundreds doing it—you can, too. No experience or special tools required. Catalog No. 7 contains 56 pages filled with shades, shade frames, figurines and bases, oil lamp converters, boring compound, and dozens of similar items. Also all kinds of sockets, cords, pipes, harps, finials, bases, and hundreds of other parts—everything you need. Special 8-page section shows 6 beautiful lamps in kit form—ready to assemble. You buy wholesale, sell at retail—make Big profits. Send 25c today for new 1952 catalog and wholesale price list—you'll be glad you did. The 25c will be refunded on your first order. Gearon Co., Dept. 500-A9, 28 S. Desplaines, Chicago 6, Ill.

GRANDFATHER Clock shoptested plans dollar Thousands bilt. Kuempel Clocks, Minneapolis 16.

CONCRETE blocks, half partition, end, all made by simple, inexpensive (under $10.00) homemade form. Send $1.00 for "Simplified Concrete Block Making", booklet with blueprints, illustrations. Plans, Virginia, Minnesota.

BUILD your own power tools, save 90%, handbook 25c. Robert Fellows, Caledonia 4, New York.

STREAMLINED. Built-in kitchen cabinets fit any kitchen. Illustrated manual describes designing and construction. All for $1.00. Thombert Company, Newton 11, Iowa.

BUILD with Concrete, Fieldstone, Earth. Movable Form System cuts costs. Construction simplified. Free literature. Smith PS, Box 36, Eagle Creek, Oregon.

BUILD Inexpensive fast production. Concrete Block Machine. Motor or hand. Write. Clyde Lee, Mountain View 1, Okla.

BUILD Florida's distinctive and beautiful 2 bedroom Masonry home: El Rancho. Complete plans $12.00 the set. Cash or money order only. C. A. Brister, Designer, 231 West Howry, DeLand, Florida.

BARGAIN Package—Jr. and adult full-size furniture patterns—$2.50 value for $1.00. Tom Tot Furniture, Box 741, Helena, Montana.

"CONCRETE Block Homes." 32-page booklet, on how to build. $1.00. H. C. Lightfoot, Civil Engineer, Richboro, Penn.

AUTOMATIC switch for your turn signals, drawings, instructions 50c. Armstrong, Box 4001, Northeastern Station, Dearborn, Michigan.

FREE handbook, build sawmills, block machines, freezers, tractors, scooters. Nichols Company, Purvis 3, Mississippi.

NOW, you can build the best Garage Door that money can buy. Write for information. Sesame, 628 Emerson, Detroit 15, Michigan.

67 OLD GOLD, JEWELRY, WATCHES, ETC.

HIGHEST Cash Paid For Old, Broken Jewelry, Gold Teeth, Watches, Silverware, Diamonds, Spectacles, Platinum. Free information. Satisfaction Guaranteed. Rose Smelting Company, 29-Y East Madison, Chicago.

JEWELRY making. Send 20c for illustrated catalog. Milady-Fair Co., G.P.O. 1328, New York City 1.

RHINESTONES, jewelry settings, cameos, sequins, beads. Send 10c for Illustrated Catalog. J & M Novelties, Dept. CK-4, Griffith, Indiana.

WATCHES. Elgin, Waltham, Other Outstanding brands. Expertly reconditioned, priced low for quick, great profits! Send for Free catalog. Plymouth Jewelry, 163-P Canal St., New York 13, New York.

Copyrighted material

68 TOBACCO & PIPES

PIPE tobacco flavors, unique, interesting, information free. Cozza Pharmacist, Pequannock 2, New Jersey.

GENUINE Block Meerschaum "Test" pipe only $1.00. Made from small left-over piece, fitted with sweet cherry-wood stem. Guaranteed same genuine creamy-white Meerschaum used in $20 pipes. See what fabulous Meerschaum smokes like for just $1.00. Money instantly refunded if not pleased. Send to Edgemont Smoke Shop Allenhurst 1, New Jersey.

CIGARS—Clear Havana, Handmade. Save $2.00! $5.50 for fifty postpaid. Regularly 15c. Check or M.O. C.O.D. (you pay charges). Seco Cigars, Rochelle Park 1, N. J.

69 FOR THE HOME

PHOTOMURALS for you by mail. Write for details. Photographic Library, RCS Studios, 123 North Wacker Drive, Chicago 6.

FREE! Be first, be sure, get your "True-To" election souvenir scroll (photo-verse) of Eisenhower, MacArthur, or Truman. Send 50c only for your selection, we'll refund your 50c after Nov. 6, if you are amongst first 10% to order. Write: "True-To" Souvenir, 1326 R.E. Lee St., Mobile, Alabama.

70 OF INTEREST TO WOMEN

DRESSES 24c; shoes 39c; men's suits $4.95; trousers $1.20. Better used clothing. Free cat. Transworld, 164-AF Christopher, Brooklyn 12, New York.

71 FOR SALE MISCELLANEOUS

NOW! Introductory sale, fascinating kodachrome slides. Send $1.00 for six sample slides and list. I.-C. Slide Sales, 1220 Shiffler Ave., Williamsport, Penna.

HAWAIIAN Shells—50 Assorted for $1.00. Alwin, Puhi, Kauai, Hawai.

72 WANTED MISCELLANEOUS

SCRAP Mercury (Quicksilver) Tantalum—Bismuth—Tungsten. Metallurgical Products Co., Established 1909, 35th & Moore Sts., Philadelphia 45, Pa.

WE buy used plating equipment. Send description. Hollywood Bronze Supply, 1624 East First Street, Los Angeles 33, Calif.

75 TATTOOING SUPPLIES

TATTOOING Outfits, Supplies. Illustrated List 25c. Zeiss, 728 Lesley, Rockford, Illinois.

76 DRAWING, SUPPLIES & EQUIPMENT

DRAFTING and artists' materials catalog—thousands of items—25c (deductible first $2 order) Gordon's, 219 Madison, Chicago.

ATTENTION: Draftsmen, Engineers, Students—Limited openings for agents. Take orders in spare time on drafting supplies. Attractive commissions. Alvin Company, Windsor, Conn.

77 TREASURE FINDERS

TREASURE Hunters! New 11-pound featherweight Model 101 locator for gold, silver and minerals. Money-back guarantee best available. Also Geiger Counters for uranium prospectors. Complete information free. The Goldak Company, 1540 W. Glenoaks Blvd., Glendale 1, Calif.

GOLD, Silver, Metal Detectors, Geiger Counters for Uranium, Mineralights. Sensational new fully guaranteed models. None Finer. Information Free. Detectron Co., 5631 Cahuenga Blvd., North Hollywood, California.

SELECTIVE metal and mineral detector. Revolutionary design. Distinguishes metals from black magnetic sands. Readily detects metals under salt water. Free literature. Gardiner Electronics Company, Department 22, 2018 N. Dayton, Phoenix, Arizona.

TREASURE—M-Scope Geiger Counters—Mineral Locators. Why buy something inferior when you can buy the best at a lower price? Backed by years of experience. Fully guaranteed by factory. Detects minerals, metals, gold, silver, coins. Payment plan available. Proven superior performance. Free 16 page illustrated booklet. Fisher Research Lab., Inc., Palo Alto, Calif.

78 WATCH REPAIRING

WATCHMAKERS'—jewelers' tools. Free instructions, catalog. Bengal Company, Culver City, Calif.

WATCHMAKERS! Beginners! Watches, Movements. Descriptive list. Box 150, Chicago 90, Illinois.

10 HIGH-grade Swiss Ladies' and Gents' Wristwatches needing minor repairs. $18.00. Write for prices. B. Lowe, Holland Bldg., St. Louis 1, Mo.

WATCHES overhauled $4.50—Guaranteed; free watch catalog. Berkowits, 1150 Castlehill, New York 61.

79 MISCELLANEOUS

OUTDOOR Toilets, Cesspools, Septic Tanks cleaned, deodorized with amazing new product. Just mix dry powder with water; pour into toilet. Safe, no poisons. Save digging, pumping costs. Postcard brings free details. Burson Laboratories, Dept. E-53, Chicago 22, Illinois.

RECEIVE mammoth mails, magazines, catalogs! Three months 25c, year 50c. Waddell's Directory, 341-D East 76th, New York 21.

BIG interesting mails three months 25c, year $1.00. Harvey Teeple, Decatur, Ind.

URANIUM prospecting information Free. Prospector, Box 142-I, North Battleford, Saskatchewan, Canada.

PANNING Gold lesson—Catalogue Beginners supplies, Mining Books, Maps, "Where To Go" Free. Old Prospector, Box 729D2, Lodi, Calif.

CHILEAN Copper Souvenir—Remit one dollar to Chilean Novelties, P.O. Box 9354, Santiago, Chile, and you will receive by registered Parcel Post a beautiful copper hand-hammered Mexican hat which can be used either as a desk ornament or as an ash tray.

LEATHERCRAFT For Pleasure or Profit. Make easy-to-assemble purses, belts, gloves, woolskin toys, 100 other items for gifts or to sell. Send 10c today for big catalog. Largest leathercraft stock in U. S. J. C. Larson Co., 820 S. Tripp, Dept. 2455, Chicago 24.

STUDY for game warden, park, forestry and patrol service. Write Delmar Institute, D-16, Whittier, Calif.

NATURAL Molding Rubber free sample. Tribby Supply, Post Office Box 3091 Station F, Jacksonville, Florida.

FOR the gold and diamonds of the Indian God "Canaima" I've staked my claim. If you've intestinal fortitude enough to draw to an inside straight, you'll air mail two bucks or your check for $2.00 to cover my cost, with your name and address to Apartado 3093 Caracas, Venezuela, South America, and I'll send you the pictures and the dope on how you too can share in the pot at the end of the rainbow in the new diamond fields of South America.

300 BIG Mails guaranteed, samples, offers, plans, propositions, 12 months listing, $1.00, (refundable). Wright Publications, 2276 Hubbard, Memphis 8, Tenn.

YOUR Leather Jacket renovated expertly. Free circular. Berlew Mfg. Co., Dept. 7, Freeport, N. Y.

FOR as little as $8.00 you can put your ad here in the November issue. Get in on the winter season mail-order rush and deliver your sales talk direct to the 4,000,000 readers of Popular Science. Same low rate you've always paid—80c a word. The November issue closes on September 25th! Write today for order blank and free booklet, "How To Make Money Out of Classified Advertising." O. K. Kelly, Classified Advertising Manager, Popular Science Monthly, Dept. B, 353 Fourth Avenue, New York 10, New York.

80 PERSONAL

DIE? Suffer? Ridiculous! Unique, thrilling book presents latest wonder drugs, miracle cures, lifesaving knowledge! Free Literature! Bijou, Box V5-1727, Hollywood 28, Calif.

CONFIDENTIAL information for single people, leading to happiness—romance. Write today! Karl Miles, Ph.D., Director, Personal Acquaintance Service, Inc., 601-G South Vermont, Los Angeles 5, Calif.

FOR as little as $8.00 you can put your ad here in the November issue. Get in on the winter season mail-order rush and deliver your sales talk direct to the 4,000,000 readers of Popular Science. Same low rate you've always paid—80c a word. The November issue closes on September 25th! Write today for order blank and free booklet, "How To Make Money Out of Classified Advertising." O. K. Kelly, Classified Advertising Manager, Popular Science Monthly, Dept. B, 353 Fourth Avenue, New York 10, New York.

"HOW Can I Find Out?" You Can! Information discreetly developed. Any matter, person, problem, anywhere. Worldwide. Officially licensed, bonded service. Established 1922. Reasonable. Confidential. William Herman, 170 Broadway, N. Y.

DETECTIVE'S Opportunities. Detective Particulars free. Write, Wagoner, P-125 West 86th, New York 24.

PSORIASIS Victims: Hopeless? New Discovery! Free Trial offer. Write Pixacol, Box 7097-S, Cleveland, Ohio.

HAPPINESS, Romance, Your future. Interesting information sent single people Free. Write Strone, 2488-PS Concourse, New York City 58.

BORROW by mail. Loans $50 to $600 to employed men and women. Easy, quick. Completely confidential. No endorsers. Repay in convenient monthly payments. Details free in plain envelope. Give occupation. State Finance Co., 323 Securities Bldg., Dept. R-14, Omaha 2, Nebraska.

MEXICAN Legal Practice Reliably Conducted. Box 1736, El Paso, Texas.

INCREDIBLE! Unprecedented! Become mental superman overnight! Floor everybody! No studying! "Memoprop" does your thinking! It's uncanny! Revolutionary! Free Literature! Bijou, Box 1727-VW, Hollywood 28, Calif.

IF you are nervous, write the Herbmaster, Forrestville 8, Virginia.

PILES! Tormented with the irritation and discomfort due to piles? Write for free important information. Mutal Products, Box 836-P, Cleveland 22, Ohio.

SCALP troubles? Avoid baldness. Free details. S. Viggiano, 6556 Ladson, Pittsburgh 6, Penna.

NEED Gifts? Inexpensive, Attractive. Samples 30c. Literature free. Box 48, Brooklyn 25, New York.

JOIN National Guild Hypnotists. Details, Hypnodiscs etc. 10c. Guild, 48B Harlem, Dorchester 21, Massachusetts.

LETTERS remailed 25c. Also private receiving address. Monthly rates. Shanks, Box 3110-G, San Francisco 19, Calif.

LETTERS Remailed—20c each. R. Haenisch, 4420 Campbell, Kansas City, Mo.

LETTERS remailed, 25c. H. W. Osborne, 525½ La Poblana Rd., Albuquerque, New Mexico.

"INTERESTING Mails"—25c keeps your mail box full three months. Bentz, Desk-H/35, Chatawa, Mississippi.

HOUSTON Weekday Paper $1.00. Sunday $2.00, mailed anywhere. R. N. Mercer, Route 1, Velasco, Texas.

LETTERS reairmailed from Havana $1.00. Jose Rabade, Apartado 3404, Havana, Cuba.

MEXICAN Law. General Practice Attorney, 1203 Arizona Street, El Paso, Texas.

INFORMATION for single people by Human Relations Consultant. Dr. B. Long, Box 375, Los Angeles 53, Calif.

REMEMBER Special Occasions. Send Dates, $2.00 year. Reminders Service, Box 66, Sta. D, Toronto, Canada.

Copyrighted material

STOP ANNOYING NOISES AND WASTING WATER

75¢

AT HARDWARE STORES EVERYWHERE

with **WATER MASTER**

TOILET TANK BALL

INSTANTLY STOPS FLOW AFTER FLUSHING

SNORKY SAYS "YOU PAINT ME AND... SAVE $20.00"

This is straight from the Horse's mouth (Hobby Horse that is) . . . I'm "Snorky", the best Hobby Horse made for children from 2 to 6 and I won't be embarrassed if you're willing to paint me yourself and buy me now for $16.95 (primed, complete with rockers) instead of the regular $36.95 (completely painted) because I'm still made of the finest materials—really tough—fully sculptured—and have anti-tip rocking action. Give your children many years of fun at this low price. Send check or M.O. for immediate shipment (via Express Collect) or write for FREE illustrated folder.

COLADONATO BROS. **Dept. S-3** **Hazleton, Pa.**

Malayan THROWING DAGGER

BALANCED TO STICK! $1.98 postpaid

The MALAYAN FIGHTING KNIFE is used for self-defense, killing game, target skill. Powerful, silent, accurate weapon. Splits 1" board at 30 ft.

EASY TO THROW!

Fun, Thrills, Excitement! Indoors—outdoors. Learn this Sport! Easy to throw accurately with our clear instructions. Beautiful, heavy-duty 10" knife. Tempered steel. Tough, rawhide-bound handle. Rare souvenir, unusual bargain. Limited quantity. At dealers or send $1.98

WHOLESALE IMPORT CO. Dept. B, 604 Marengo, Alhambra, Calif

New Low Cost Electric Water Heater Gives You HOT WATER AUTOMATICALLY

From Your Present Tank!

- No dirt, grime, soot, flame!
- SAFE! Every part UL approved!
- Install in 10 Minutes, or less!
- No new tanks or plumbing required.
- Works automatically—saves on fuel bills!

New, UL approved LECTROMATIC changes gas, coal or oil-burning water heater into modern ALL-ELECTRIC unit! Turns on automatically when needed, shuts off automatically when water is heated. To install, simply shut off water. Remove plug from water tank. Screw LECTROMATIC into opening (as shown), then PLUG IN! Plenty of hot water all day long. Uses only ¼-½c electricity per gal. of hot water. Temp. adjustable from 100 to 180 degrees. Save postage. Send check or money order for $19.95 now. Money back in ten days if not delighted. Full one year guarantee! ORDER NOW!

Complete—Ready to Plug In—Only $19.95

COLLOID EQUIPMENT Co. Inc. Dept. PS-9, 50 Church Street New York 7, N. Y.

Famous Gun Editor Names MARLIN CAL. .35 REM. "#1 BRUSH GUN"

RAY CAMP, Gun Editor, *Mechanix Illustrated:* "Combine the speed-handling of lever-action, the massive drive of Cal. .35 Rem., lowest possible 'scope mounting—and you've got the superlative gun for woods shooting. In short, the Marlin Cal. .35 Rem."

Model 336 Cal. .35 Rem. Sporting Carbine —$78.95.* See your local dealer. If none available, write us for name and address of nearest one. Many Marlin dealers have a lay-away plan. Ask your dealer about it.

**Prices slightly higher west of the Rockies*

And for Super-Smooth Shaves— NEW MARLIN MAGNETIZED BLADES!

Marlin's magnetizing process makes even sharpest blades smoother and keener. And the smoother the blade, the smoother the shave. New Safti-Quik Wrapper protects fingers. Just hook blade onto razor, wrapper slides off. New *Magnetized* Marlin Blades, double-edge, 12 for only 25¢. Marlin products sold in U. S. A. and Canada.

The Name For Game

Marlin

Fine Guns Since 1870

VALUABLE COUPON—MAIL TODAY!

The Marlin Firearms Co.,
Dept. 9-PS, New Haven, Conn.

Please send me your catalogue with full information and photo-illustrations of Marlin Guns, plus new cartoon booklet, "More Fun With Your .22 Rifle." I understand you will also send me a pack of (please check preference)...single or...*Magnetized* double-edge Marlin Razor Blades. I enclose 10¢ for handling.

NAME_____

STREET_____

CITY_____ ZONE____ STATE____

Copyrighted material

A GREAT 22 CAL.

AUTOMATIC

FOR ONLY

$31.95*

Model 151K
22 cal.
15-shot "auto"

15-shot magazine
Straight line feed
Open sights . . . .
Monte Carlo stock

Amazing quality and dependability. A masterpiece of gunsmithing!

SEND FOR FREE CATALOG

*($32.95 West of Rockies)

YOUR MOSSBERG DEALER WANTS TO SHOW YOU THIS ONE
Compare it with the finest!

No sales at factory.

O.F. Mossberg & SONS, INC.

26509 St. John St., New Haven 5, Conn.

GIANT BALLOONS

Genuine govt. surplus weather & target balloons. Have fun or make money with 'em. Great sport in back yard or for parties, picnics, dances, fairs, etc. Great attention getters, it'll bring crowds to business events, conventions, exhibitions, trade shows; for lodges, civic occasions or school functions. Thousands of satisfied customers from coast to coast. Order now at these low prices.

3 Ft. Dia. **39c** —6 Ft. Dia. **79c** —13 Ft. Dia. **$1.39**

"Marksman"
AIR PISTOL

It's a target pistol but it looks, feels, muzzle loads and cocks like an army .45. You can have fun indoors in rumpus room or basement; or out in the back yard or woods. Make it a test of skill and "outmarksman" your friends. Caliber .177, accurate, high-powered, guaranteed. Complete with free supply of BB's, darts & pellets. Full payment must accompany order. **$5.95**

EXTRA AMMUNITION

Darts, **50c** doz.—BB's, **15c** for 150—Pellets, **$1.50** for 500

- *On above items add 10% for handling & delivery*
  Calif. residents please add sales tax

WAR ASSETS DIV. VOLUME SALES CO.
Dept. S-9-52, 3930 Sunset Blvd., Los Angeles 29, Calif.

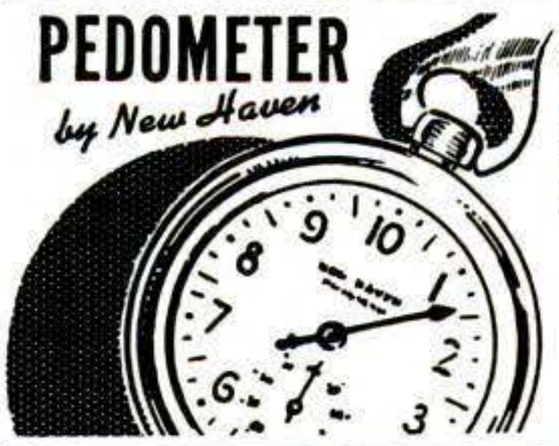
FANS! FANS!
ALL TYPES — ALL SIZES

Kitchen Ventilators, Exhaust Fans, Attic Fans, Blowers, Heat Boosters, $7.95 up. Desk Fans, Window Fans, Blades, Guards, Shutters, Motors, etc.

Free illustrated catalogue, dealers inquiries invited

EDWARDS BROS. ESTAB. 20 YEARS
WESTERN APPLIANCE CO., INC.
5650 Grand River Ave., Dept. S, Detroit 8, Mich.

PEDOMETER
by New Haven



Registers the miles you walk up to 100. Constructed like pocket watch. Nickel-Plated case. Hook to clip on pocket or belt. Foolproof. Great for outdoor folk, housewives. Check or M.O.

Only **$5.95** post paid

ENRIGHT, Inc.
3074 Kensington Ave.
Phila. 34, Pa. Dept. 6

Mustang

LIGHTWEIGHT
$370.00
(Fed. tax paid, at factory)

9.5 hp. 4-cycle. 3-speed. Foot-shift. Over 70 miles per gal. Over 60 m.p.h. Write for free circular.

MUSTANG, Dept. PS
635 W. Colorado, Glendale 4, Calif.

HULL AUTO COMPASSES ALSO SAVE THE DAY IN STRANGE CITY TRAFFIC

Watching for road signs in city traffic calls for an extra pair of eyes . . . and every intersection is an opportunity to make a wrong turn. Here, as on the open road, Hull Auto Compass drivers sail confidently through. Write for local dealer's name, free literature.

HULL MFG. CO.
P. O. Box 246-E-9
Warren, Ohio

Beaconlite® ILLUMINATED $6.95
STREAMLINE® STANDARD (not illus.) $4.95

521 DIFFERENT STAMPS-25¢

SPECIAL IMPORTED COLLECTION INCLUDES THIS

UNITED NATIONS FIRST DAY COVER

You get the very first stamp issued—on a colorful cover—cancelled at the special UN office on the *first day of issue!* It's a historic souvenir you'll be proud to place in your album—a rarity that only one collector in 100,000 can have! And you *also* get hundreds of other unusual stamps and sets from all over the world —*521 all-different stamps*—ALL yours for only 25c to introduce our Bargain Approvals. Money back if not delighted. And you also get, FREE, our 36-page Midget Encyclopedia of Stamp Collecting!

PLUS

U.S.A. — $1-$5 1931 top values.
ALLIED MILITARY GOV'T—Cpl. set (9).
MONACO—Pope Pius triangle, set of 2.
FRANCE—Anti-Communist set.
KOREA, ISRAEL, INDONESIA—special issues.

SEND 25c TODAY ASK FOR LOT EH-4

ZENITH CO., 81 Willoughby St., Brooklyn 1, N.Y.

SAVE MONEY

TEST YOUR OWN RADIO AND TELEVISION TUBES AT HOME!!!

Pat. Pending

ALSO AVAILABLE!
CONDENSER TESTER
Checks Shorted, Open and Leaky Condensers **$6.98**

CONDUCTANCE
TUBE TESTER

No Tube Manual or knowledge of tubes necessary—Tests **All** Tubes—100% accurate for direct shorts, opens, burned out tubes.

ONLY $4.98 Buy it—Try it—If not satisfied, return in 5 days—Money cheerfully refunded.

SEND NO MONEY — ORDER C.O.D. plus postage, or send check, cash or money order & we pay postage.

E-Z TESTER CO.
(Dept. PS-9) MACON, GA.

Copyrighted material

SAVE 75% ON

WORK CLOTHES!

SURPLUS STOCK FROM MIDWEST SUPPLY FIRM!
Terrific values you've got to see to believe!

SHIRTS 79c
Made to sell for 2.99! Now Only — 4 for $2.99

What a buy! 4 for the price of one! These shirts, though used, are washed, sterilized and ready for long, tough wear. In blue or tan. *Send name, address, neck size.*

PANTS to match 99c
Sold for 3.95 now only . . . . . 4 for $3.75
Unbelievable Bargains! *Send waist measure and inside leg length.*

COVERALLS . . . wear 'em used and save plenty! Originally 5.95. Now only . . **$1.79**
Send chest measurement.

SATISFACTION GUARANTEED! Money back if you're not convinced these are bargains you can't beat! You can't lose so order TODAY for immediate delivery! Pay postman or send money with your order and save postage.

GALCO SALES CO. Dept. 249
4064 East 71st Street • Cleveland 5, Ohio

French STYLE DUELING SWORDS

SET OF TWO $2.98 post paid

Once used in deadly combat—now an exciting sport! Learn right at home. Fun—safe*—educational. These swords are made of fine blue spring steel, polished metal guards, turned handles, rubber safety tips. Fencing teaches quick thinking, develops coordination, posture. Since the Middle Ages, Europeans have enjoyed the sport of dueling. *Now advocated by U.S. colleges. Set includes two swords and the booklet, "The Art of Fencing". Special mail order price. **YOUR MONEY REFUNDED IF NOT COMPLETELY SATISFIED** Send $2.98 to **TECHRITE CORP.**, Box 12T, South Pasadena, Calif.

CARBURETOR TOO RICH MAKES MOTORIST TOO POOR

Car owners who are wasting money, getting poor gas mileage due to over-rich mixtures, will be pleased to learn how to save gasoline by **VACU-MATING OVER-RICH MIXTURES.** Vacu-Matic fits all cars, trucks and tractors. *Automatic* and operates on the supercharge principle. Easily installed in a few minutes.

SALESMEN WANTED! Big Profits

For **FREE** particulars, how you can install one on your own car for introducing, just send your name and address on a postcard to **VACU-MATIC, 7617-1936 W. State St., WAUWATOSA, WIS.**

ELECTRICITY *Anywhere*

FOR PORTABLE, EMERGENCY OR HOME USE

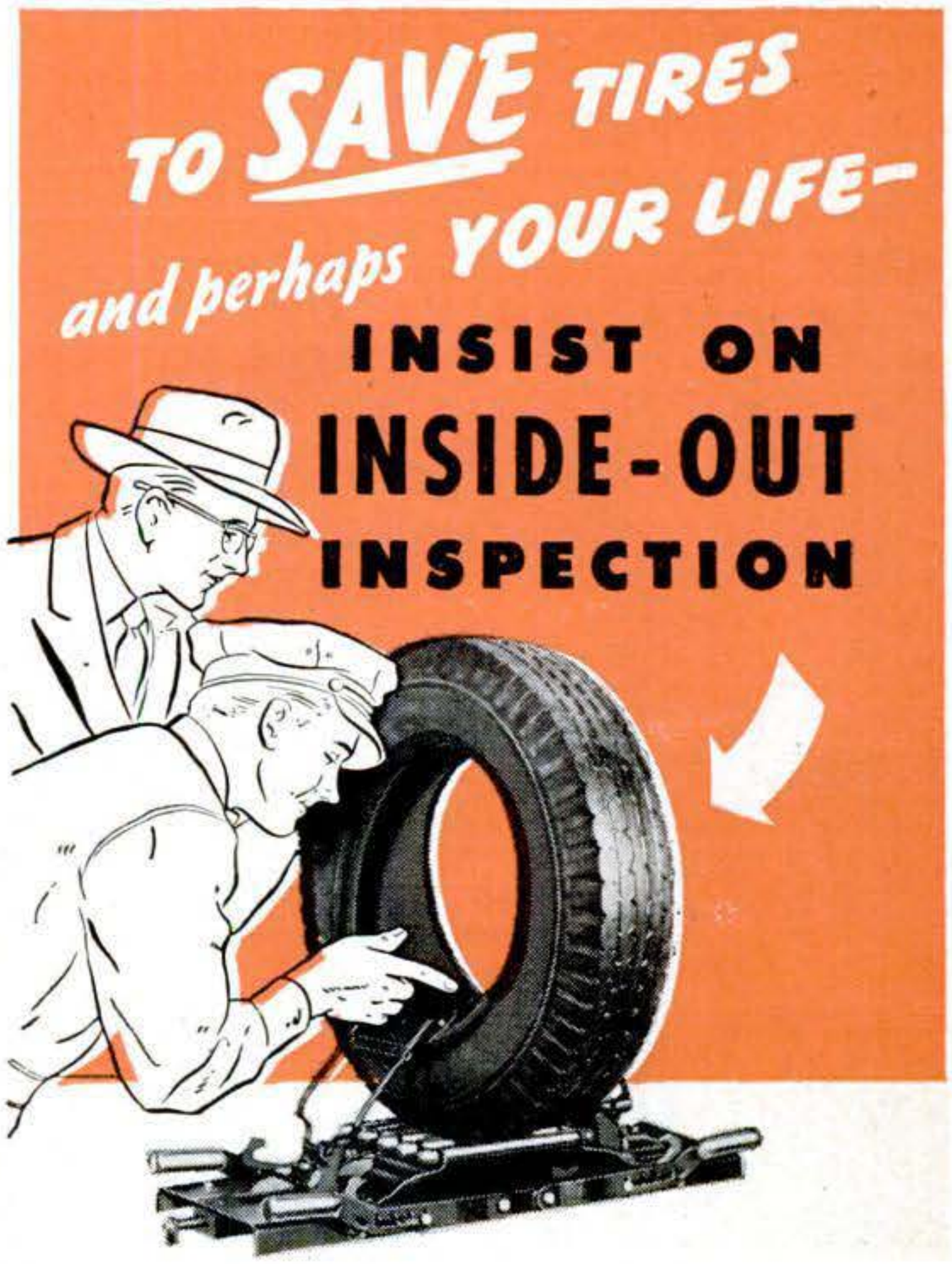
ONAN Electric Plants generate 110-volt, 60-cycle current for homes, farms, cabins and resorts beyond the highline. Lightweight, portable plants cut costs, speed work for contractors. Standby plants protect hospitals, homes, civil defense units against power failure. 400 to 55,000 watts. Gasoline or Diesel-powered. Priced from $219.00.

WRITE FOR CATALOG

D. W. ONAN & SONS INC.
6743 UNIV. AVE., S. E., MINNEAPOLIS 14, MINNESOTA.

CAN YOU JUDGE AN EGG BY ITS SHELL?

Neither Can You Judge the Safety of a Tire By Its Outside Appearance



Your BOWES Dealer Is Equipped for Complete Inspection

The Bowes "Seal Fast" dealer is a trained tire repairman. He has the most modern equipment for the job. He will quickly and efficiently check your tires inside and out for hidden breaks that cause blowouts, small holes that gather dirt and water, resulting in tire rot. Any necessary repairs will be made by the sure, dependable Bowes method. Remember, you can't judge an egg by its shell. Insist on *inside* and *out* inspection—save tires and, perhaps, **YOUR LIFE.** See your Bowes tire repairman NOW—and be sure.

DRIVE IN WHERE YOU SEE THIS EMBLEM → **BOWES** SEAL FAST

BOWES "SEAL FAST" CORP., INDIANAPOLIS 7, INDIANA

Copyrighted material

GET SUPERIOR LUBRICATION WITH

300% more efficient MARINE LIQUI-MOLY

(A Mill River Product)

LOW COST PROTECTION for all TYPES of ENGINES including OUTBOARDS

• HIGHER SPEEDS • TIGHTER BEARINGS • LESS HEAT • MORE POWER • REDUCES FRICTION • LESS GAS

Mfd. by Lockrey Co.

LIQUI-MOLY added to crank case or mixed with usual fuel for outboards as per instructions on can. We have hundreds of letters on file from satisfied users for your inspection. DEALERS WANTED

ARMSTRONG & GALBRAITH, INC. (Dept. S)

National Distributors—Marine Trade

226 FOURTH AVE. NEW YORK 3, N. Y.

ARMSTRONG & GALBRAITH, INC.
226—4th Ave., New York 3, N. Y. Dept. S

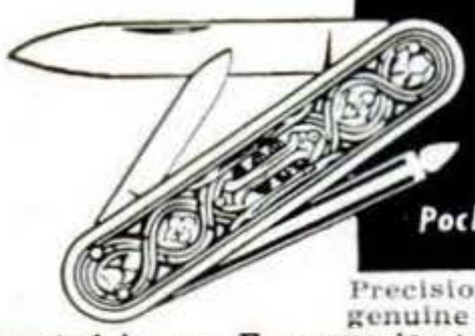
Enclosed find check $.....or M. O. for which please send postpaid.
½ Pt. Can **$1.25** 1 Qt. Can **$4.50**

Name.....

Address.....

City.....State.....

• AN AMAZING VALUE!



IMPORTED BEST QUALITY

Pocket Knives at Bargain Prices!

Precision-crafted, these beautiful, genuine SOLINGEN pocket knives are directly imported by us. Far superior to ordinary knives, all blades are of German stainless steel, perfectly honed for greater keenness; keep their razor-sharp edges far longer than inferior knives costing as much or more. Ideal for gifts, office, shop; perfect for sportsmen.

Model IA Mother-of-Pearl Type, Two Blades.....$2.50
Model IB Stainless Steel Case; very thin, Two Blades.....$2.75
Model IC Genuine Buffalo Horn, Two Blades.....$3.25
Model ID (Illustrated) Brass Case, Toledo Pattern, hand-chased, 3-colored etching. Two Blades and nail-file. A Masterpiece.....$4.25

Send Money Order or Check. We pay postage.

Money Back Guarantee

CRESCO TRADING CO. 17 EAST 42nd STREET NEW YORK 17, N. Y.

For Sports—For Fun

DeLuxe Chrome *"PERFECTA"*

BLANK PISTOL

"Shoot the Works"—safely—with this handsome blank pistol! Looks, feels and sounds like "the real thing." But it can't hold regular cartridges. World's only blank pistol that ejects empties automatically. New feathertouch trigger pull. Six-shot magazine; safety catch. Precision-built of carbon steel. Gleaming chrome finish. 3¼" long. A world-famous pistol, excellent value at..... **$10.95**

The original and genuine. Accept no substitute!
100 BLANK CARTRIDGES..... **$1.25**

ORDER BY MAIL

No Police Permit Required

Send Check or Money Order

GODFREY IMPORT CORP.,
Dept. L-12, 277 Broadway, N. Y. C. 7

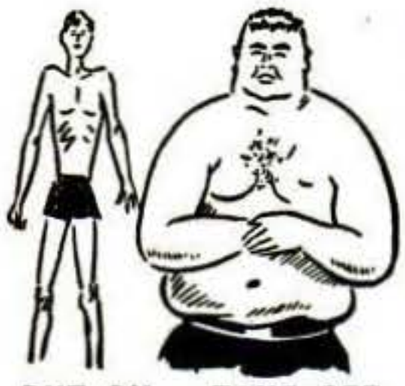
COULD YOU USE $1,000,000?

We'd like to Hand You the Million—But You Realize That's Impossible. BUT WE CAN MAKE YOU HEALTHY!

FIRST TIME OFFER! **$3.95** Postpaid

Sold Nationwide at $5.95

weighs only 1½ lbs.!



PUT ON MUSCLE TAKE OFF FAT

MR. AMERICA USES HIP POCKET GYM!

Among Mr. Americas of the last three years there's a fan of HIP POCKET GYM! A top health and strength magazine recently photographed him exercising with HIP POCKET GYM.

HIP POCKET GYM

THERE'S NO MAGIC, NO MIRACLE

HIP POCKET GYM helps both stout and skinny people. Using scientific and medical principles, it helps the body help itself by *automatically adjusting to your strength and ability.* You do not have to be Mr. America—even children can use it!

SO SIMPLE! SO EASY! No nailing on walls—no crawling on floors—no swinging from ceilings—no lengthy correspondence courses! A few minutes a day in a lazy man's way rids you of that run-down, tired feeling!

- **Recommended By Over a Half Million** People during the past 25 years **without one word of advertising!**
- **Builds Health in Veterans' Hospitals!**
- **Scientifically Constructed** of pure natural rubber that actually improves with age! So light and compact—take it wherever you go!

5 DAY MONEY BACK GUARANTEE

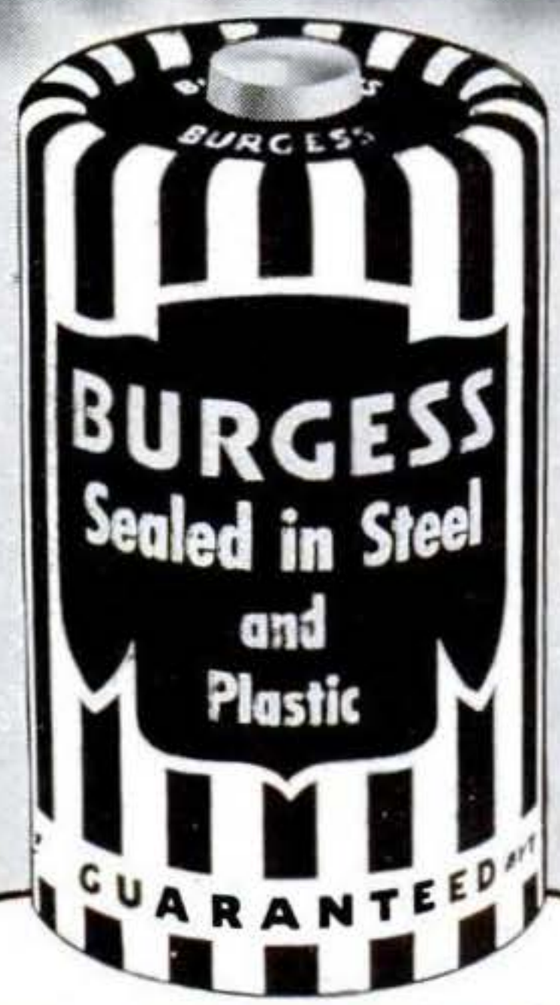
FREE With every HIP POCKET GYM you get FREE a Complete Set of Health and Strength Exercises!

MAIL COUPON TODAY

MAJOR LEAGUE SUPPLIERS,
Dept. PS-2, 160 Green St., New York 12, N. Y.

Please send ....HIP POCKET GYMS @ $3.95 each. **PLUS FREE** set of Health and Strength Exercises. Total Enclosed $.....
☐ Check ☐ Money Order ☐ $1 Deposit with C.O.D. Save Handling and Postal Charges by Sending Check or Money Order.
Name.....
Address.....
City.....Zone....State.....
If I am not satisfied for any reason whatsoever, I may return the Hip Pocket Gym within 5 days for full refund!

For Discriminating Users



Scientists, explorers and engineers choose Burgess Batteries where lives depend on battery power, because they are recognized as best by the experts. Insist on using Burgess Batteries in your flashlight. Burgess Battery Company, Freeport, Ill.; Niagara Falls, Can.

A Quality Dry Battery For Every Purpose

Copyrighted material

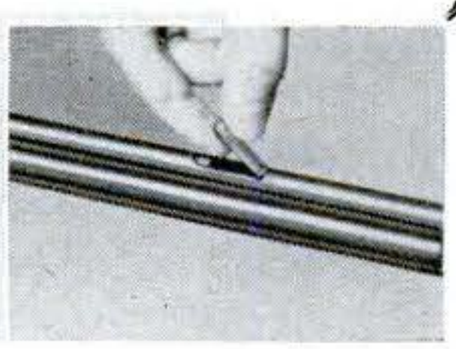
Terrific NEW tubular .22 by H&R

It's the exciting .22 caliber bolt action repeater with tubular magazine! With ingenious H&R "Duo-Feed", load through tubular magazine port for a full magazine. Load through top of receiver for firing only a few rounds. Exclusive on H&R "Fieldsman" now at your gun dealer's.

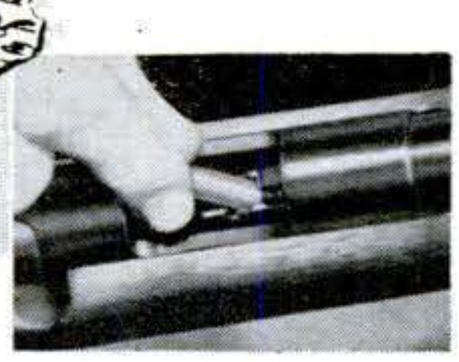
H&R "FIELDSMAN"

MODEL 852

featuring EXCLUSIVE DUO-FEED loading



Load through magazine port



Load through top of receiver

Tubular Magazine holds 15 long rifle, 17 long or 21 short cartridges loaded interchangeably without adjustments. Double extractors; hand-rubbed, oil-finished American walnut stock.

$26.95 Retail

MOST IMPROVED .22 FOR '52!

H&R "PLAINSMAN" • Model 865

$23.50 *retail*

5-shot, bolt action repeating .22 Completely new Speed-E-Jec clip ejector . . . easier, faster loading.

Flick release — out slides the clip

H&R "PIONEER" • Model 765

$15.40 *retail*

Bolt action single shot

THE ONLY .22 GUARANTEED FOR 10,000 ROUNDS!

Only Rifle with 10,000 round Performance Bond. "Redi-Feed" loading platform, self-cocking action, side thumb safety.

Harrington AND Richardson

FREE Catalog on all H&R rifles, revolvers, shotguns . . . write to

154 Park Avenue • Worcester 2, Mass.

Canadian Subsidiary: H&R ARMS CO., Ltd., Drummondville, Quebec

QUALITY ARMS FAMOUS THE WORLD OVER

Copyrighted material

Model 413D

Your

"OUTING PALS"

for Good Food
Good Light
Wherever You Go!

You always have good food with a Coleman Camp Stove along. You're sure of plenty of light in camp at night with a Coleman Lantern. Unsurpassed for emergency uses in floods, disasters, power failures.

Model 200

Coleman®

CAMP STOVE • LANTERN

Easy Meals—The Coleman Camp Stove cooks like a city gas range. Instant lighting. Two and three-burner models. Make and burn their own gas from gasoline. Safe—help prevent forest fires. Fold up and carry like a suitcase.

More Fun with the powerful Coleman All-Purpose Lantern. Floodlights 100-ft. area. Compact; light weight; sturdier built. 8 to 10 hours lighting service from one filling. Safe; can't spill fuel. Stormproof. Coleman **REFLECTOR** makes it a high-power spotlight. See it lighted—ask your dealer.

THE COLEMAN COMPANY, INC., WICHITA, KANS.

MAIL COUPON TO The Coleman Co., Inc.
Dept. 207-PS2, Wichita 1, Kansas

Please send me free literature about Coleman Camp Stoves, Lanterns and other Coleman Appliances.

NAME _____

ADDRESS _____

CITY _____ STATE _____

SAVE 50% - THOUSANDS HAVE ASSEMBLED

$42 UP PACKAGED BOAT KITS

27 MODELS

Dinghies, skiffs, racers, inboards, outboards and cruisers. Assemble your own boat, it's easy, it's fun! All parts pre-cut or pre-fabricated from finest materials. Get all the facts from our big 24 page catalog. See how Packaged Boats are built, how they perform, how exclusive construction features make assembly easy. Includes specifications, performance data plus hardware and paints.

SEND 25¢ for NEW 24 PAGE CATALOG

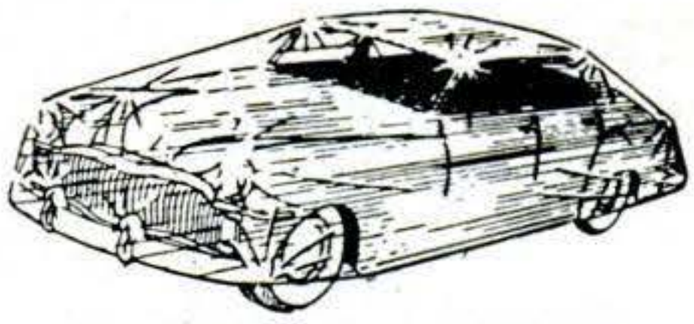
CUSTOM-CRAFT - DEPT. 5 - BUFFALO 7, N. Y.

BOAT PLANS PATTERNS ▶ Over 50 modern plans and full size patterns. Racing classes, cruisers, inboards, outboards, sail boats. By famous designers. 6' to 30'. DESIGN CATALOG 35¢. Design Catalog and boat building handbook, $1.00

MARINE MART - DEPT 5 - BUFFALO 7, N. Y.

PORTABLE GARAGE

$6.95



PLASTIC VINYL

USE IT ANYWHERE!

• Goes wherever your car goes • Folds compactly • Keeps rain, snow, dust, salt air, sun or sleet away • Protects your car's finish • Durably constructed of vinyl plastic that is long wearing and tough • Nylon threads for extra security • Spring-tite, elasticized bottom, holds securely in all kinds of weather • Fits all makes and models • Direct from manufacturer • Enclose check or money order for $6.95, or sent C. O. D.

10-Day Money Back Guarantee

MARDO SALES CORP.
480 Lexington Ave., Dept. G-575, New York 17, N.Y.

409 East Pico Blvd., Room 1-J, Los Angeles 15, Calif.

WAR SURPLUS BARGAINS

$500,000.00 INVENTORY for QUICK LIQUIDATION

Surplus items—hundreds of them for home, shop, factory, farm and outdoor use. New items, used items, reconditioned items—all at tremendous savings—all priced for quick sale.

PAGE AFTER PAGE OF VALUES

This big catalog shows page after page of amazing money saving values. Write for your copy today. Send 10c to cover postage, mailing, etc. Write today!

10c

SEND TODAY FOR YOUR COPY

STARK'S

509 So. State St.
Dept. PS-9
CHICAGO 5, ILL.

Copyrighted material

★When *Marfak* is rubbed with a finger, it forms a fluid film. Yet it keeps a tough, protective "collar." That's what happens when **bearings get *Marfak* chassis lubrication from your Texaco Dealer. The working lubricant is "sealed in." And there's protection for 1,000 miles or more! *Marfak* clings tight to points of wear and friction. It's compounded to resist washout, squeeze-out, jar-out. That's why you enjoy longer lasting "cushiony" driving ease. Get *Marfak* lubrication today. See your Texaco Dealer, *the best friend your car ever had.***

Faithfully yours 50 *for Fifty Years*

THE TEXAS COMPANY

TEXACO DEALERS IN ALL 48 STATES

Texaco Products are also distributed in Canada and in Latin America

Copyrighted material

State Commander V-8 Starliner "hard-top" White sidewall tires, chrome wheel discs—and glare-reducing tinted glass—optional at extra cost.

Excitingly styled new Studebaker saves gas amazingly

THE JET-STREAMED look of the new Studebaker tips you off to one secret of its gas economy.

The whole car is trim and sleek—free from power-wasting excess weight.

Thanks to this advantage, a Studebaker Champion and Commander V-8 finished first and second in actual gas mileage—ahead of all standard class cars competing in this year's Mobilgas Economy Run.

Like most of the contenders, the Studebakers used Overdrive. It's available at extra cost—and so is Studebaker Automatic Drive. Try out a thrifty Studebaker right away.

1852 ★ Studebaker ★ 1952

One hundred years of progress on the roadways of the world

Sleek "swept-back" lines are a Studebaker style mark. Get a Commander V-8—or a Champion in lowest price field.

Copyrighted material

POPULAR SCIENCE
REG. U. S. PAT. OFF Monthly

At filter center (above), reports of observers are plotted on grid boards and evaluated.

You, Too, Can Shoot a Plane

As a civilian spotter or plotter, your "flash" report may trigger the guns that will down an enemy bomber.

By Herbert O. Johansen
PSM PHOTOS BY W. W. MORRIS

ENEMY bombers can get through. The radar net guarding our coasts and borders is uncanny in its sky-scanning vigilance. But there isn't enough of it—and it has loopholes. Low-flying planes, for instance, can sneak under its bouncing electronic beams of vision.

That's why the Air Force wants a million civilian human eyes peering through those loopholes—24 hours a day—to help spot in time any airborne atom bomb intended for New York, Pittsburgh, Detroit, Washington, Seattle, Wichita or any other target.

Those million eyes would belong to

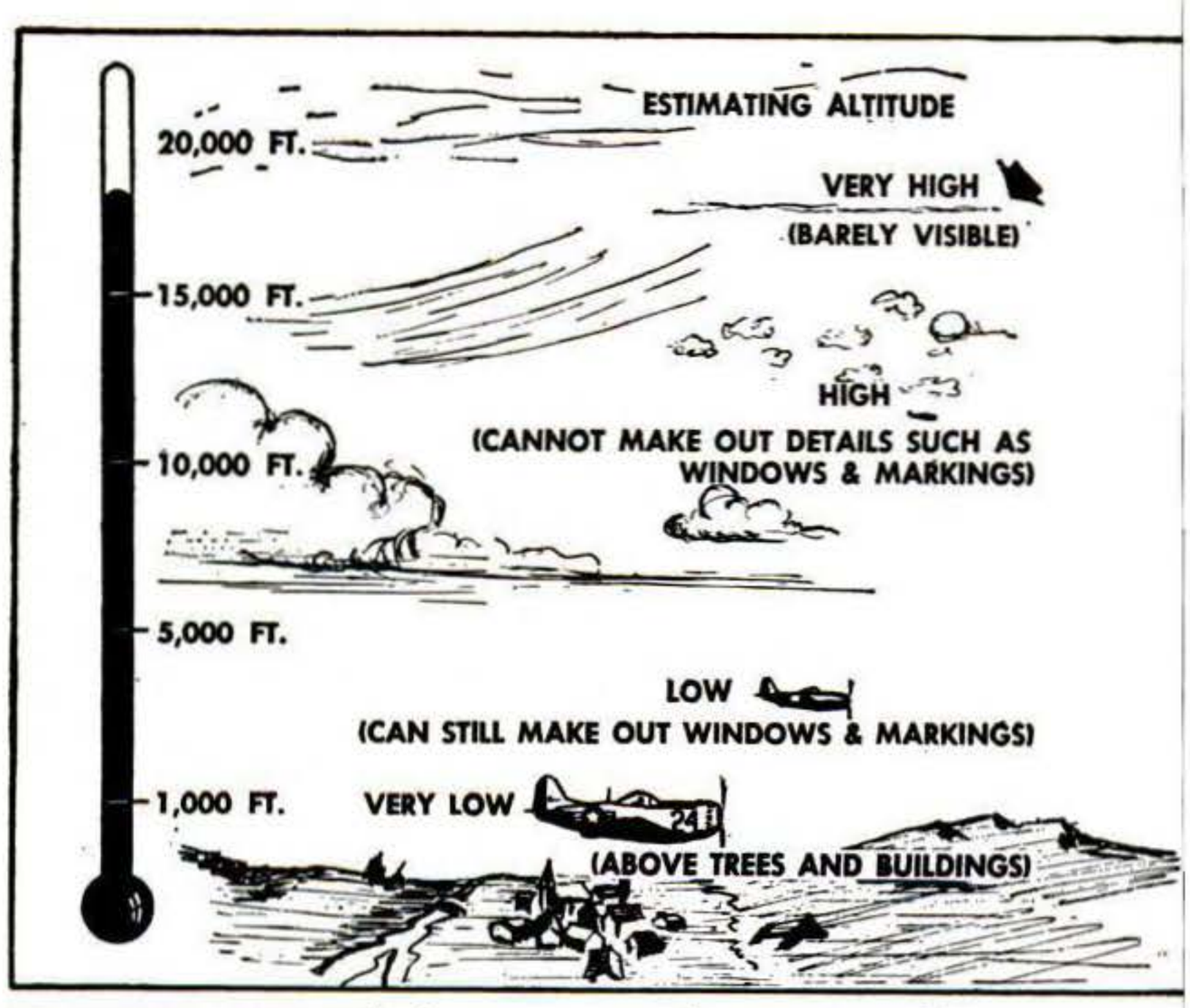
Copyrighted material

SPECIAL AIR FORCE WINGS are awarded to men and women of the Ground Observer Corps.

500,000 volunteer members of the Ground Observer Corps. They would man 19,400 spotters' observation posts and 17 evaluating filter centers in 27 states.

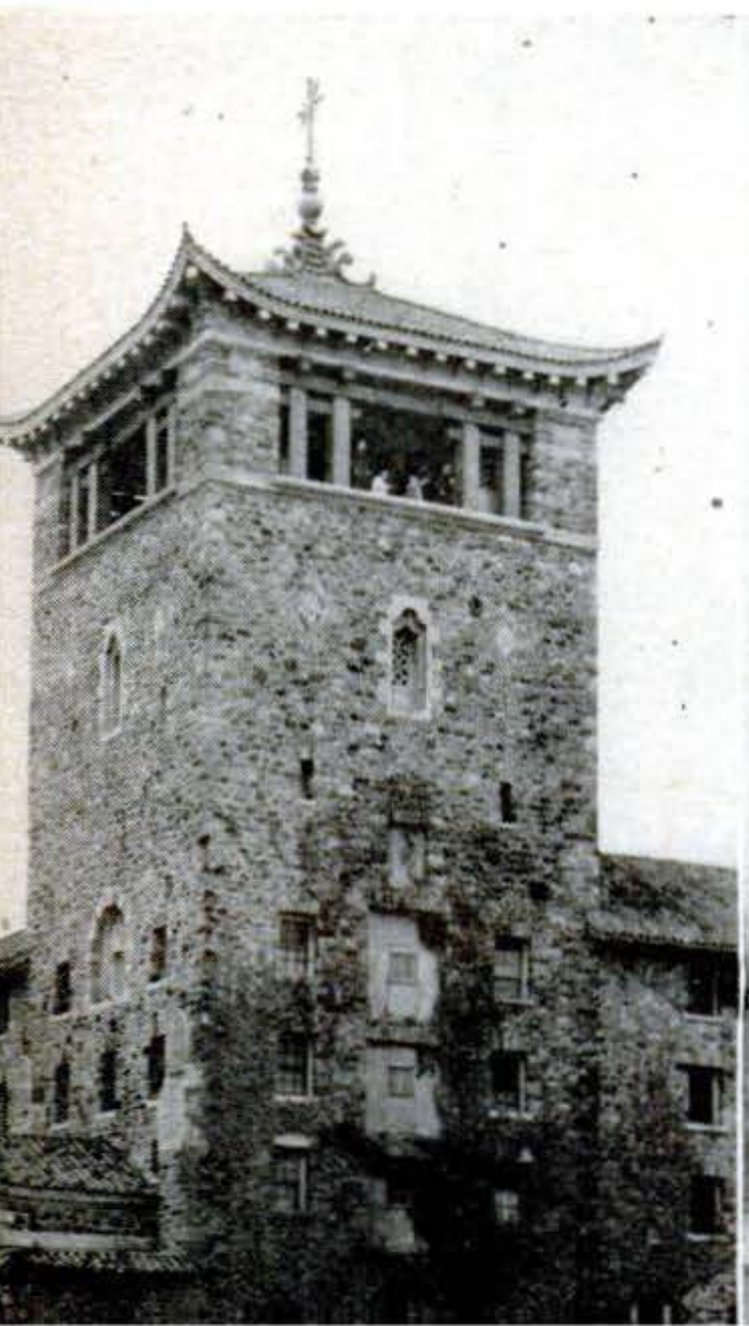
The Ground Observer Corps was organized two years ago and has been on a stand-by and training basis, taking part in periodic alert exercises. Now these civilian volunteers are being mobilized as an around-the-clock operation. Here is why:

- For the first time in U. S. history, a potential enemy with aggressive ambitions has the atomic bomb and long-range bombers capable of reaching our shores.
- There is no assurance that the nation's air defense will have advance warning of an attempted assault—hence the urgency of a system that can detect and track enemy aircraft from the moment they cross our borders.



TRAINING CHART helps spotters determine altitude of planes. Spotters do not have to be aircraft-identification experts. They report planes only by general type.

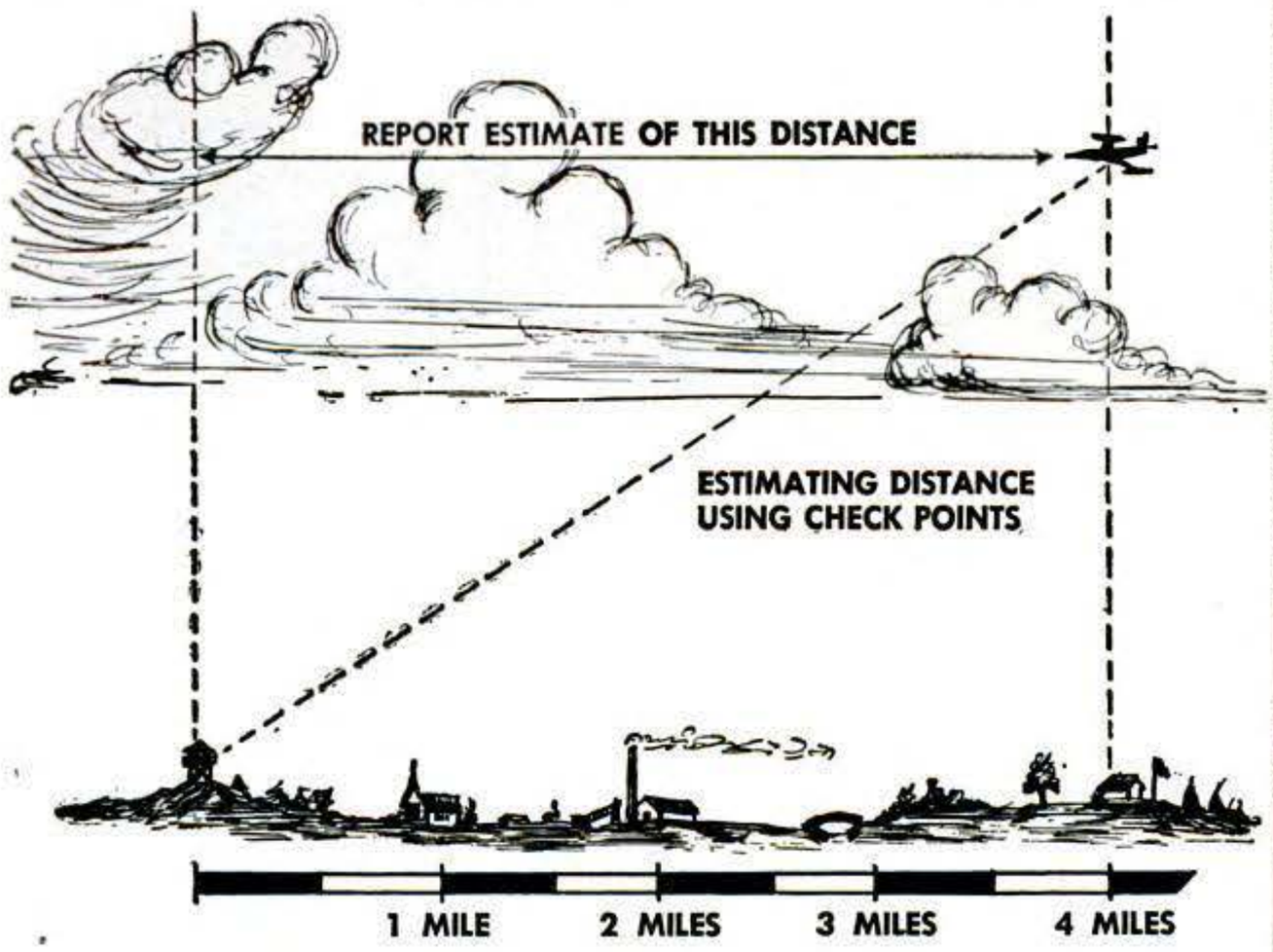
Our only weapons, should they penetrate our outer defenses, are Army antiaircraft and the guns, cannon and rockets of our fast jet interceptors. These guns, says the Air Force, are literally at the beck and call of the civilian volunteers of the Ground Observer Corps.



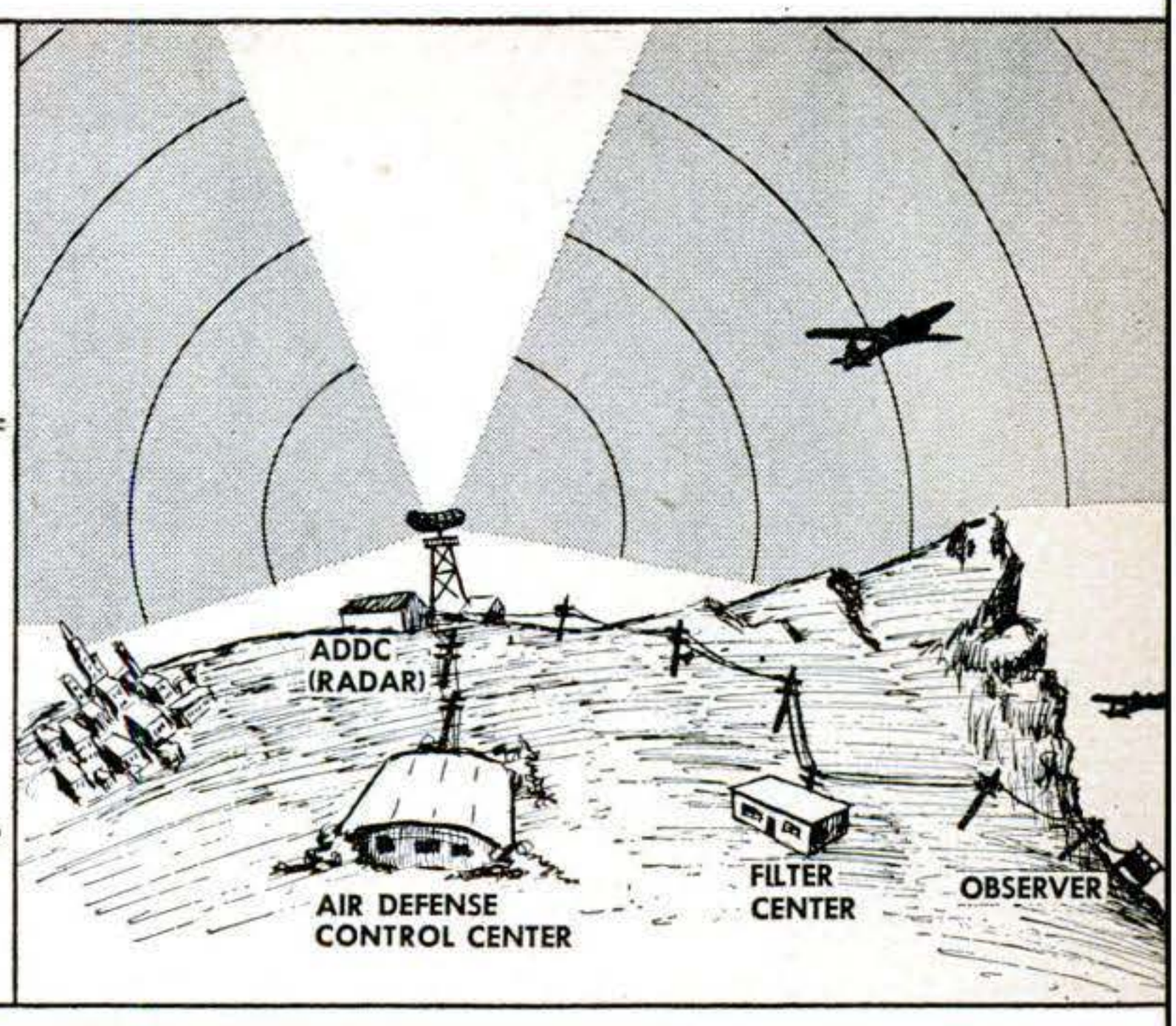
1 GROUND OBSERVATION POSTS are located about eight miles apart, high above the ground like this one on top of the bell tower of the Maryknoll Seminary at Ossining, N. Y. Others are on top of office buildings, firehouses, forest-ranger and Coast Guard stations, even on top of a racetrack grandstand. Visibility must be at least four miles.

2 A MULTIMOTOR AIRPLANE has been spotted by Ossining Supervisor William Nowller. Another observer (in booth) phones report to filter center in nearby White Plains: "Aircraft Flash—one multimotor—low—no delay—Baker Mike Zero Zero Red—west two miles—flying south." On parapet is one of Maryknoll brothers who help out in observing.

Copyrighted material



A PLANE'S DISTANCE from the observation post is another important reporting factor. Here is how spotters use familiar landmarks at known distances to establish location.



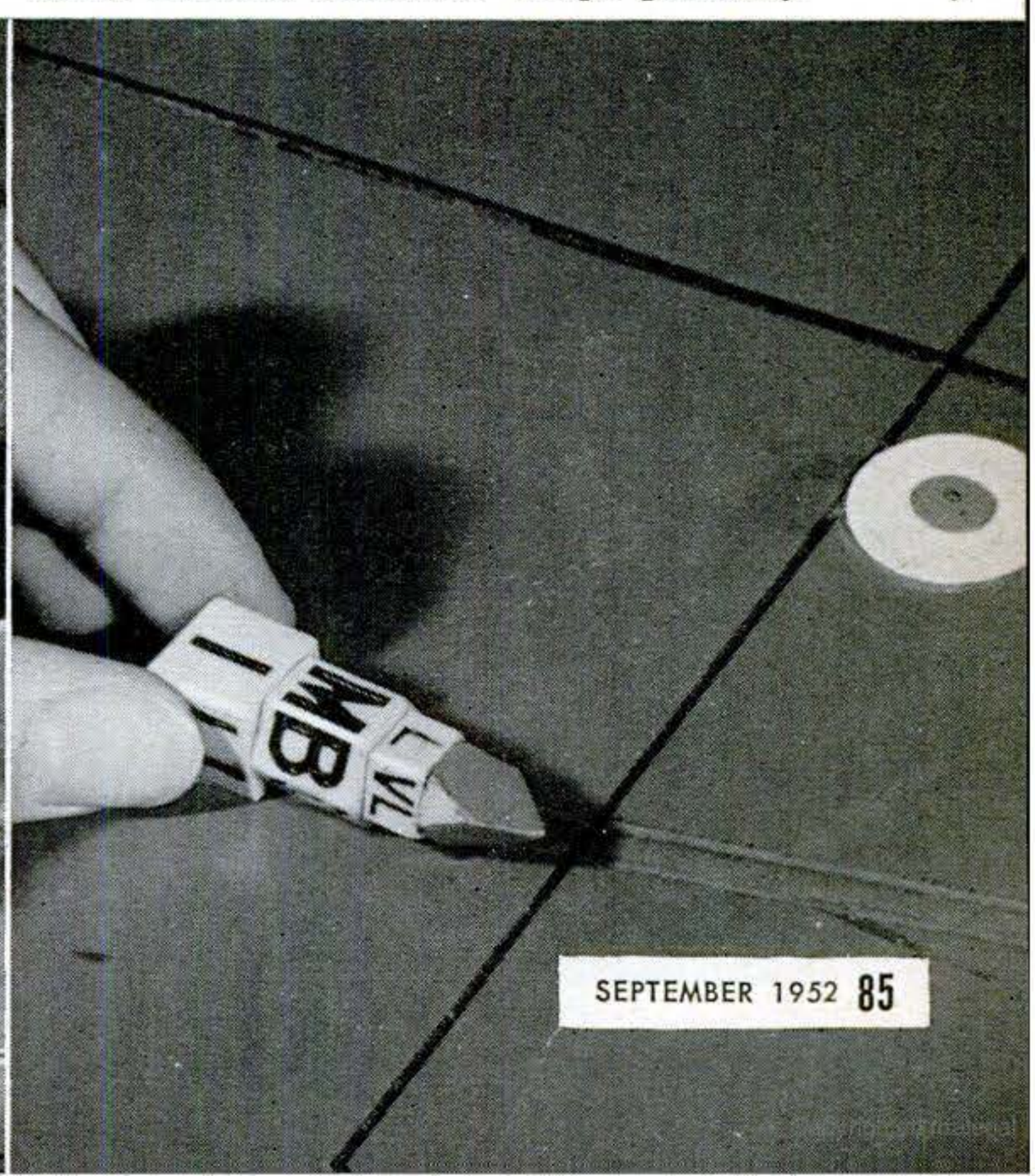
RADAR LOOPHOLES are shown here by white areas. Near center of drawing above is the vertical cone of "radar silence." Low altitudes are another radar weakness.

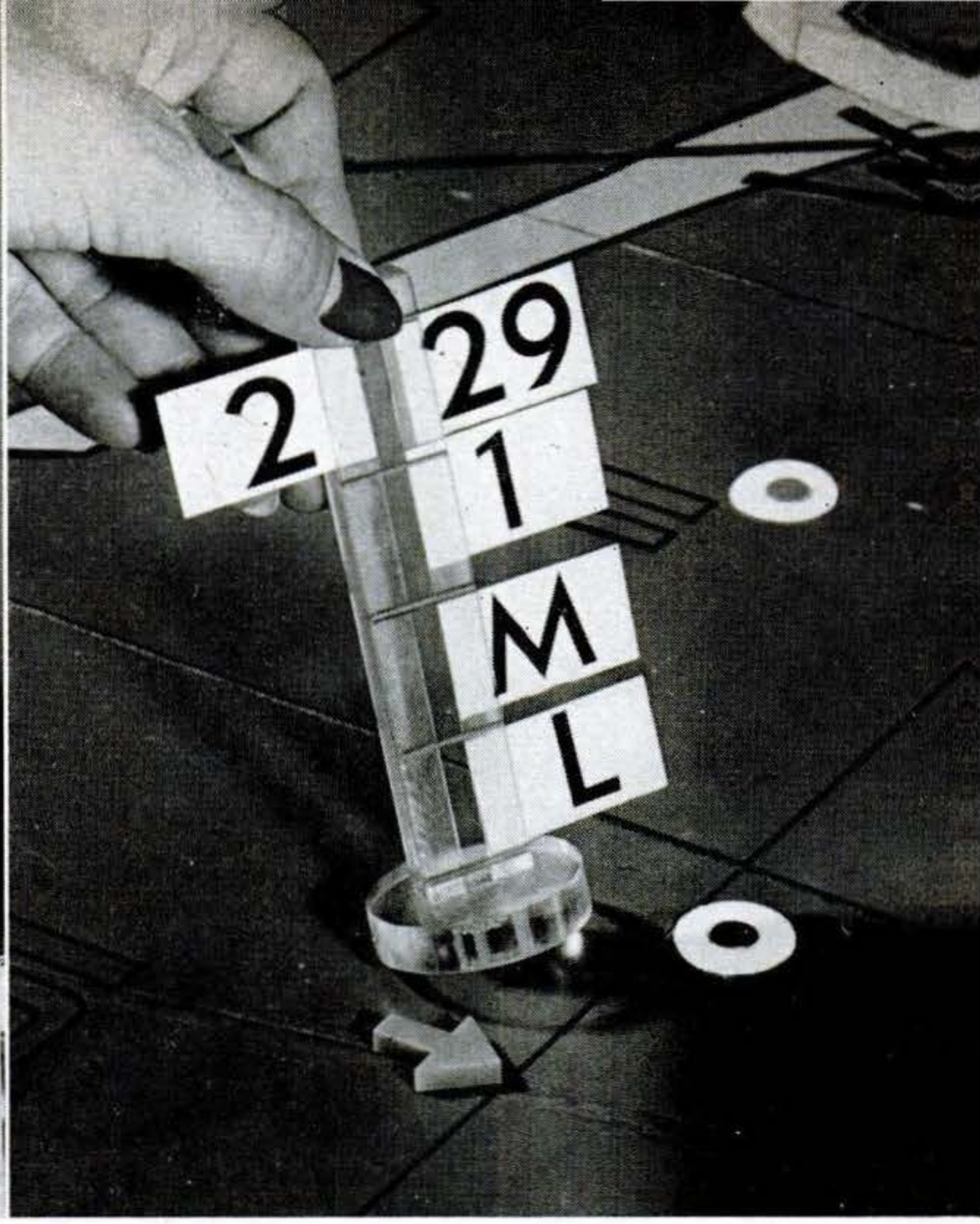
Today some 150,000 of the volunteers are trying to bring into being the Air Force's Operation Skywatch. They need help to protect your home, your life and your way of living. There is no pay or glory. But certainly there is incentive in the thought that one atom-carrying bomber packs the destructive power of 150 World War II bombers.

Any individual volunteer's "Aircraft Flash" might be the one saving an entire city, possibly hundreds of miles away. These pictures show you how the volunteers help the airmen.

3 PLOTTER at Air Force filter center takes the incoming call with "Air Defense, go ahead." She (or he) then records the spotter's information on a "pip" (shown in close-up in next photo) and places it on a grid board, pointing south and "two miles west" of a circle locating the Ossining Observation Post Baker (B) Mike (M) Zero Zero Red.

4 THE PIP has four movable sections on which the spotter's information is recorded, as below: 1 (one), M (multimotor), L (low-flying). By turning these sections, the plotter can make the pip indicate various numbers of aircraft, different types and different altitudes. *(Please turn the page for more Ground Observer Corps photos.)*





5 IF THE PIP INFORMATION is established as a "track," or new flight, a filterer calls for a "raid stand." Above a clerk is preparing a raid stand with the information: one—multi—low. At top has been added a track number, which will identify the flight as reports from spotters at other observation posts move it across the filter-map table.

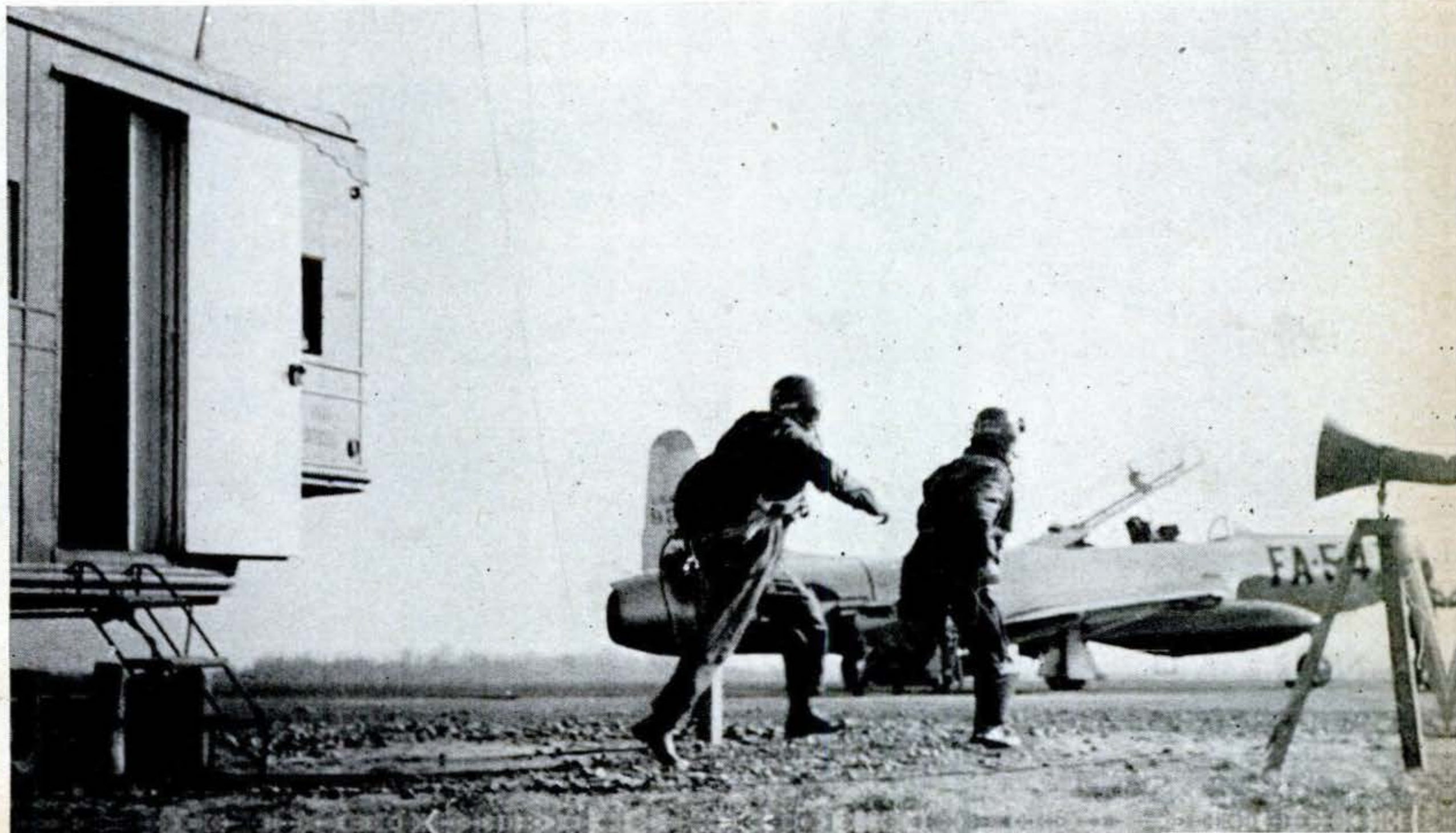
6 THE RAID STAND is then put down in place of the pip along with an arrow to show direction. Before establishing a track this way, however, the filterer must compare pip information with other information already on the board. It might not be a new flight but part of a track previously established, in which case that raid stand is moved forward.

9 AIR FORCE COMBAT ALERT CENTERS, such as one below, never sleep. Their job is to send up jet interceptors to investigate any unidentified plane within their area of operation. With the Ground Observer Corps on 24-hour duty, there is less chance of an enemy plane getting by. Here, our observer's report, one—multi—low, has just been received.

7 **"TELLERS,"** seated on a balcony above the plotting boards, watch the raid stands and report the information they display and their movements by direct wire to Air Defense Direction Center (ADDC). Above, a teller has phoned in our one—multi—low, and its position and track number. Recorder at right tabulates all information reported to ADDC.

8 **AIRMEN PLOT** information received at ADDC from the filter-center tellers on transparent vertical boards. This is checked against information of airplane flights already received by radar and other means. If our one—multi—low is unidentified along the flight track reported and is considered a threat, jet interceptors are notified.

10 **PILOT AND HIS RADARMAN** dash for their F-94 all-weather jet interceptor. Only minutes have passed since the observer on top of the Maryknoll bell tower phoned in his one—multi—low report to the filter center. Fortunately, in this case, the unidentified plane was a friendly one. But it might have been an enemy atom-carrying bomber. END



"World's Finest" New Tank Puts on Show of Strength

RUGGED, fast and full of fight, like the scrappy general for whom it was named, the Army's newest tank, the Patton 48, is now streaming off production lines at several great plants. Frank Pace Jr., Secretary of the Army, calls it the world's best medium tank.

Shells are more likely to glance off the Patton 48's sloping hull and egg-shaped turret—single pieces of armor casting—than they are to penetrate them.

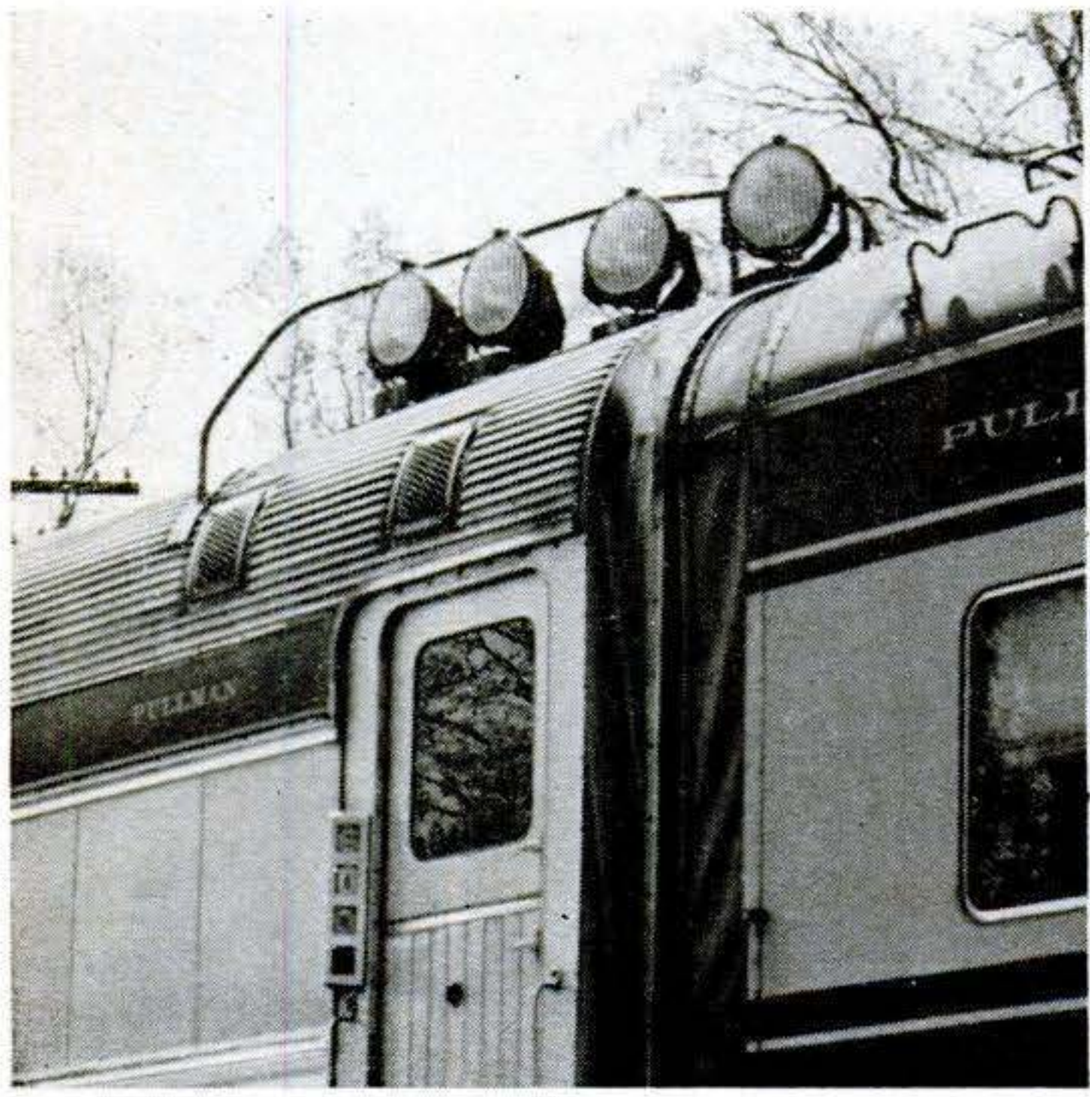
The new tank's formidable armament includes a high-velocity 90-mm. gun with a removable tube for quick replacement in the field, as well as both .50- and .30-caliber machine guns. Powered by an 810-horsepower, air-cooled V-12 engine with cross-drive transmission, the Patton 48 is both speedy and highly maneuverable. Chrysler, Ford and General Motors are now working simultaneously in production of the new medium tank.

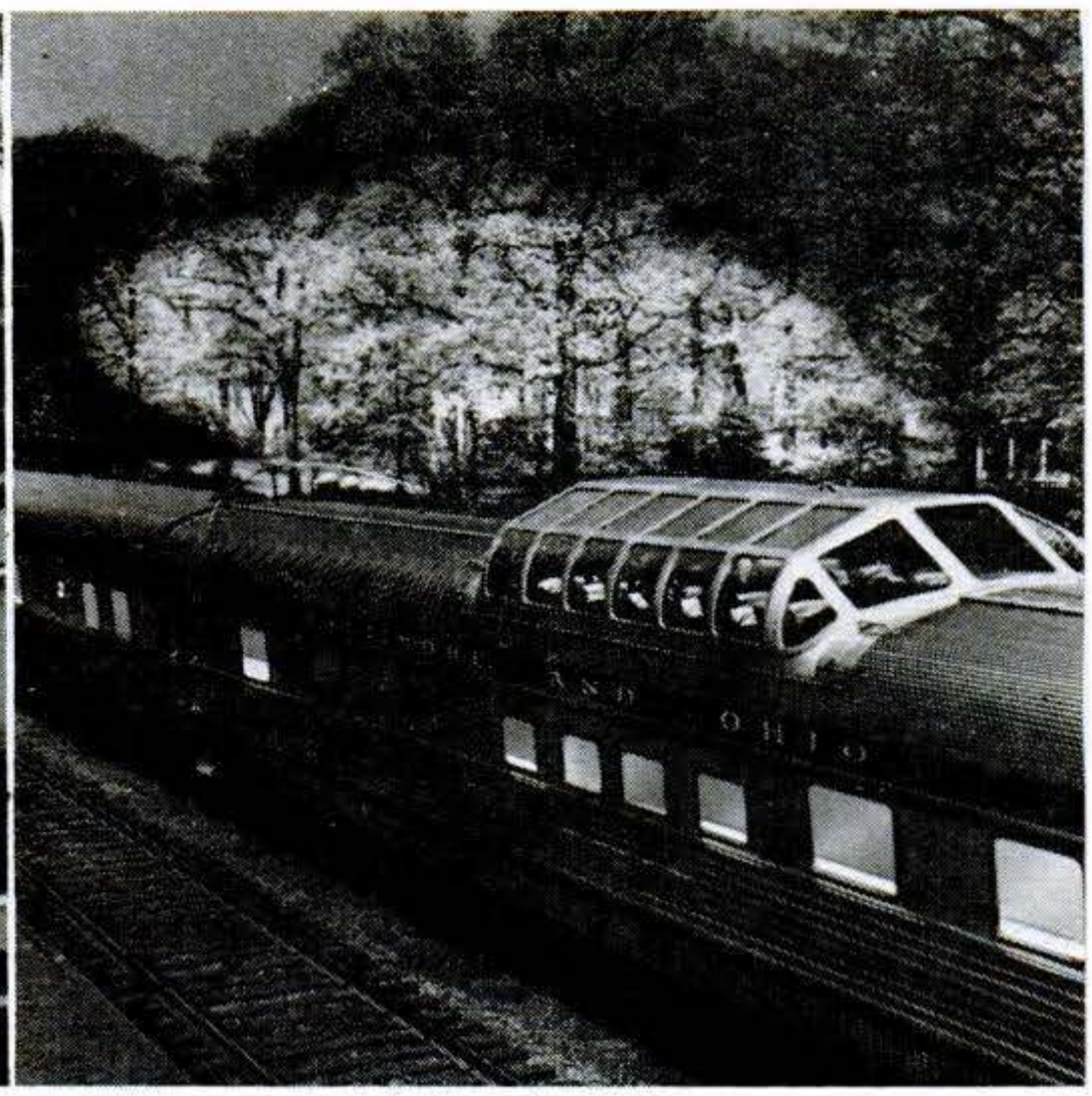
MIGHTY AGILE for its weight, 45 to 50 tons, the Patton 48 easily climbs a three-foot wall.

SURFACING after a plunge into four feet of water. Wide treads give it greater "flotation."

Trains Provide Their Own Moonlight for Night Rides

FOUR floodlights mounted in batteries on the roofs of B & O strata-dome cars enable passengers traveling on that railroad between Washington and Chicago to see the immediate countryside clearly at night. The lights, throwing diffused beams, illuminate the passing scene along the right-hand side of the track.





Copyrighted material

Strictly for show, a line of the new four-man Patton 48s rumbles forward into mock battle.

HULL'S EGG SHAPE is clearly seen here. Cupola machine gun is loaded and fired from inside.

FOUR TELEPHONE POLES are knocked galley-west by a Patton 48 with its turret reversed.

Baby Planetarium Ably Imitates Its Big Brothers

ONE-QUARTER the size of a typical commercial planetarium and 100 times cheaper, the miniature model shown at right nevertheless reproduces all the stars visible under normal conditions from any spot on earth at any date—past, present or future. Light shining through precisely positioned holes in a hollow metal dodecahedron (12-sided object) projects the stars on a plastic dome 20 feet in diameter. Auxiliary projectors can be added to show sun, moon and planets.

Spitz Laboratories of Philadelphia developed the planetarium.

Copyrighted material

By Edward Hutchings Jr.

He Makes Shop Jokes Pay

This correspondence-school cartoonist has found fun, fame and fortune in memories of his days as a skilled machinist.

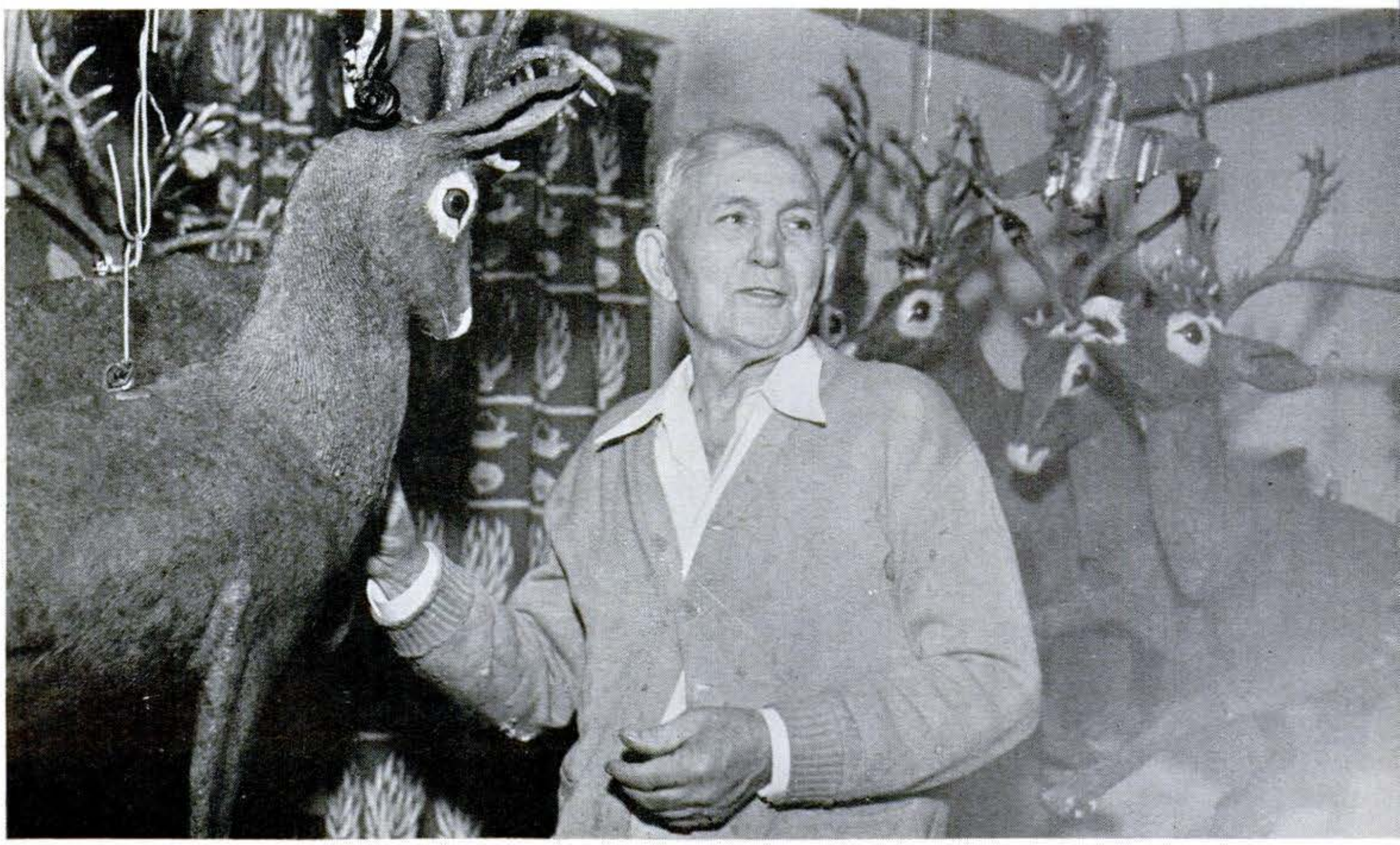
"MY KIDS think I'm just a plain cartoonist," Jim Williams once explained to a friend. "They don't realize I could still make a good living as a machinist."

This is an odd statement to come from one of America's popular newspaper cartoonists. But Jim Williams is prouder of being able to build a locomotive than of his knack of producing cartoons.

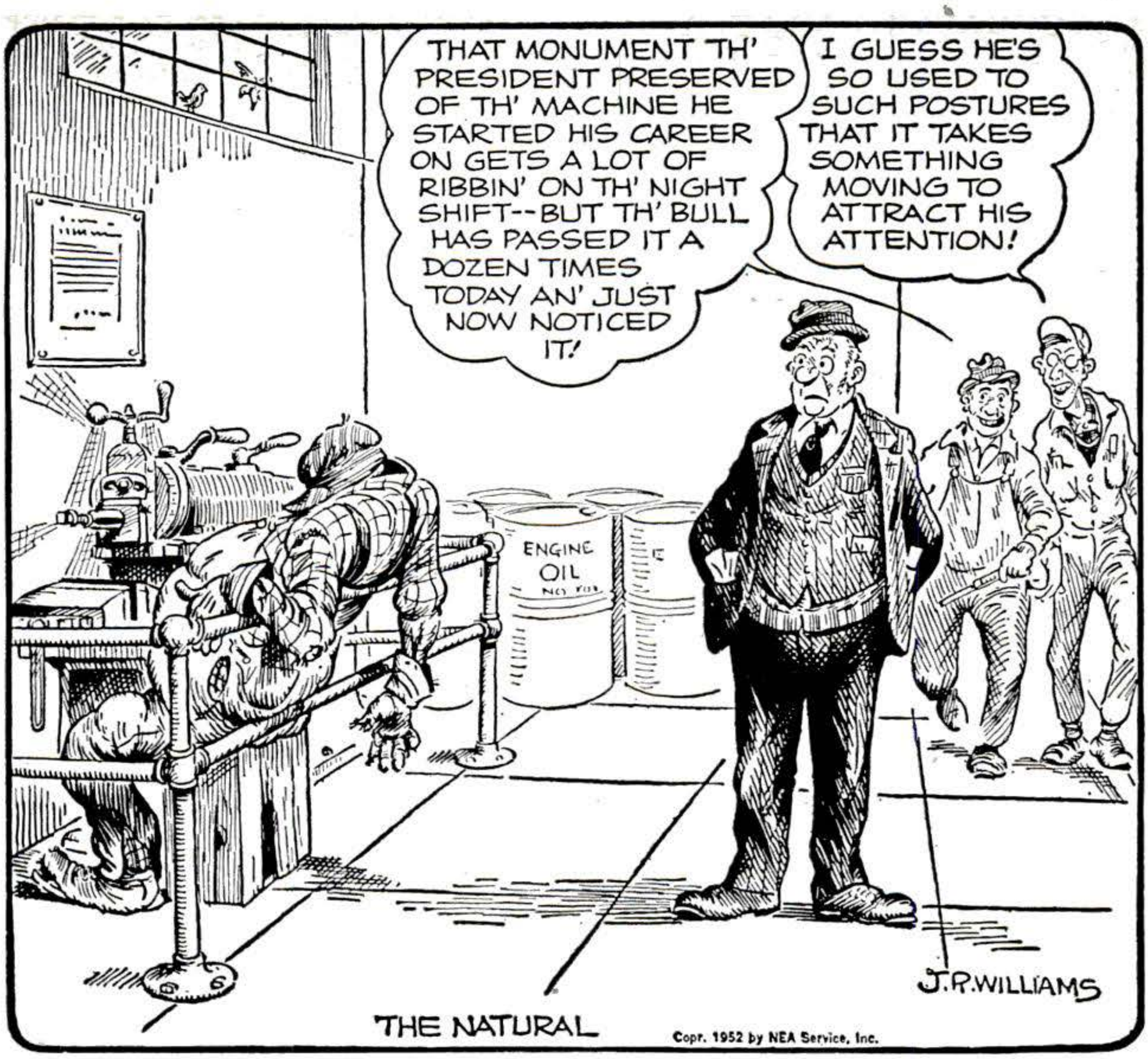
He has proved that he can do both. In the last 30 years J. R. (for James Robert) Williams has drawn more than 10,000 "Out Our Way" pictures. These appear, at the rate of one a day, in over 1,000 newspapers

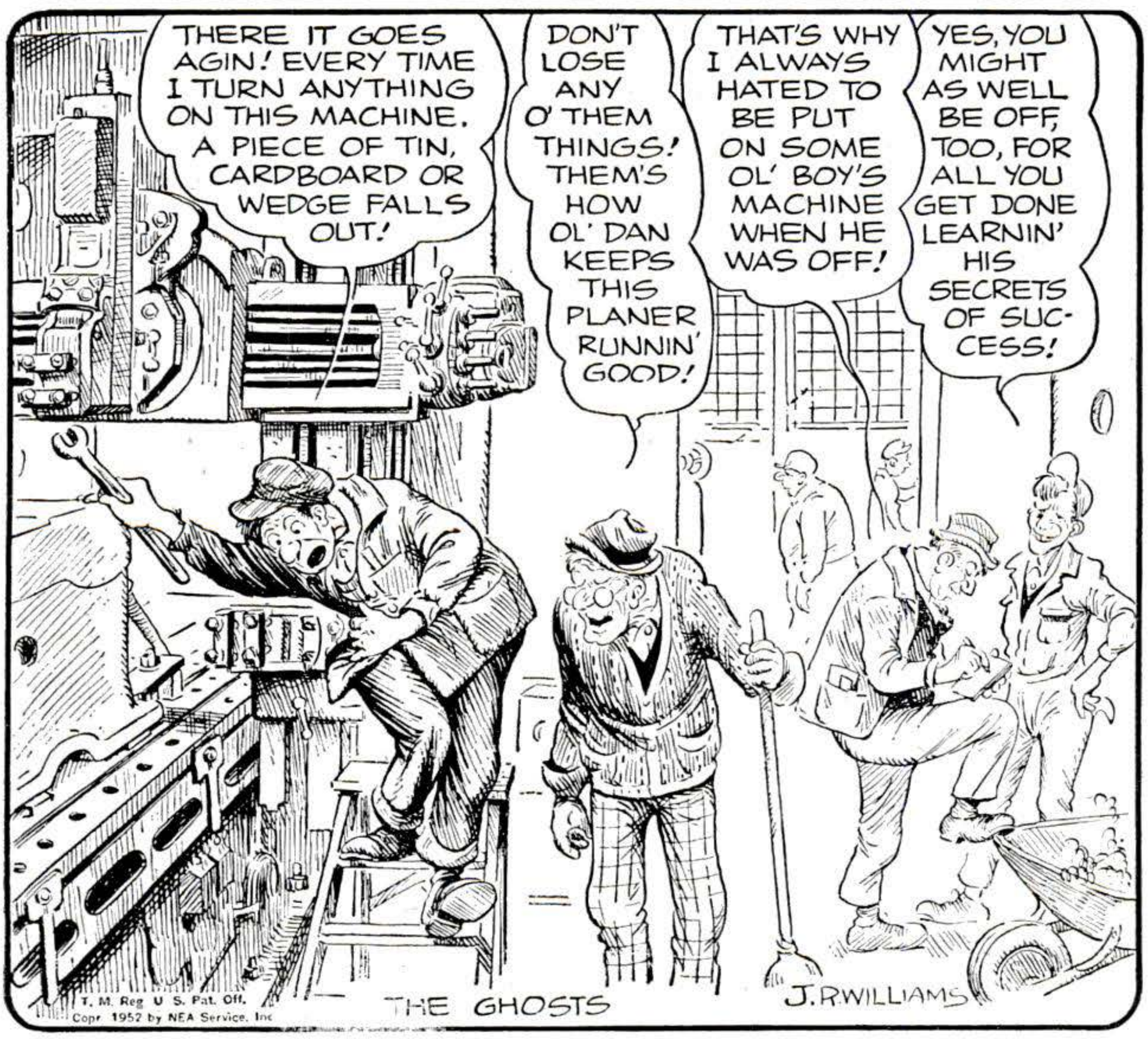
WILLIAMS' FAVORITES among his 2,500 machine-shop cartoons are the two at right. His star character, The Bull of the Woods, is modeled on the foreman he once worked for.

IN HIS OWN SHOP Jim Williams pats a papier-maché reindeer (below) that is part of a display he is making to string up between two trees on his lawn next Christmas. Here, in his garage, he spends what time he can spare from the daily stint of drawing his cartoons.

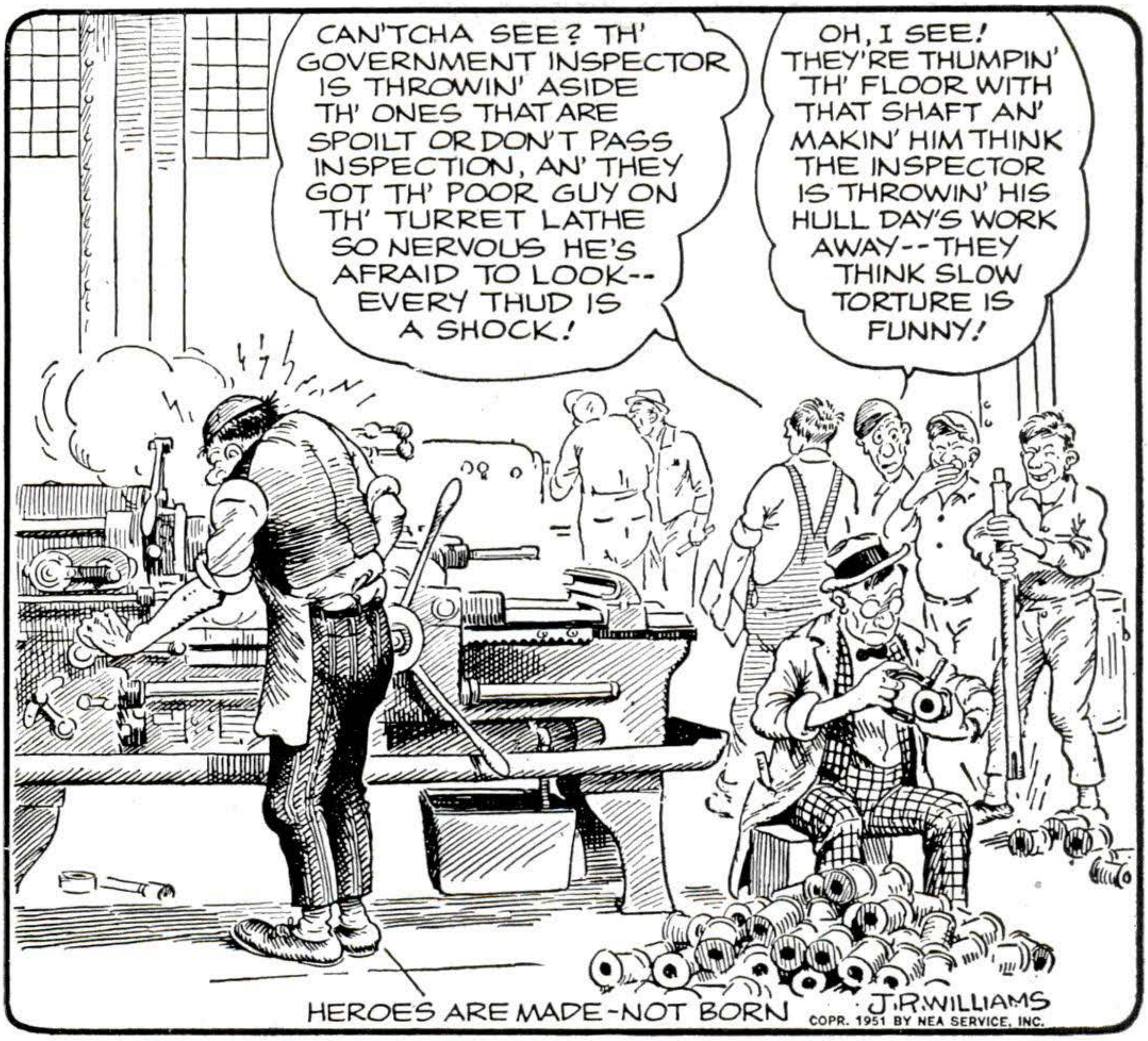


Copyrighted material





Copyrighted material



—more than any other cartoon in the world. They have brought Williams letters of appreciation from J. Edgar Hoover, Bob Hope, William S. Knudsen and Fred Allen. He has been tagged "the Mark Twain of illustrated humor." And his pencil has made him a wealthy man.

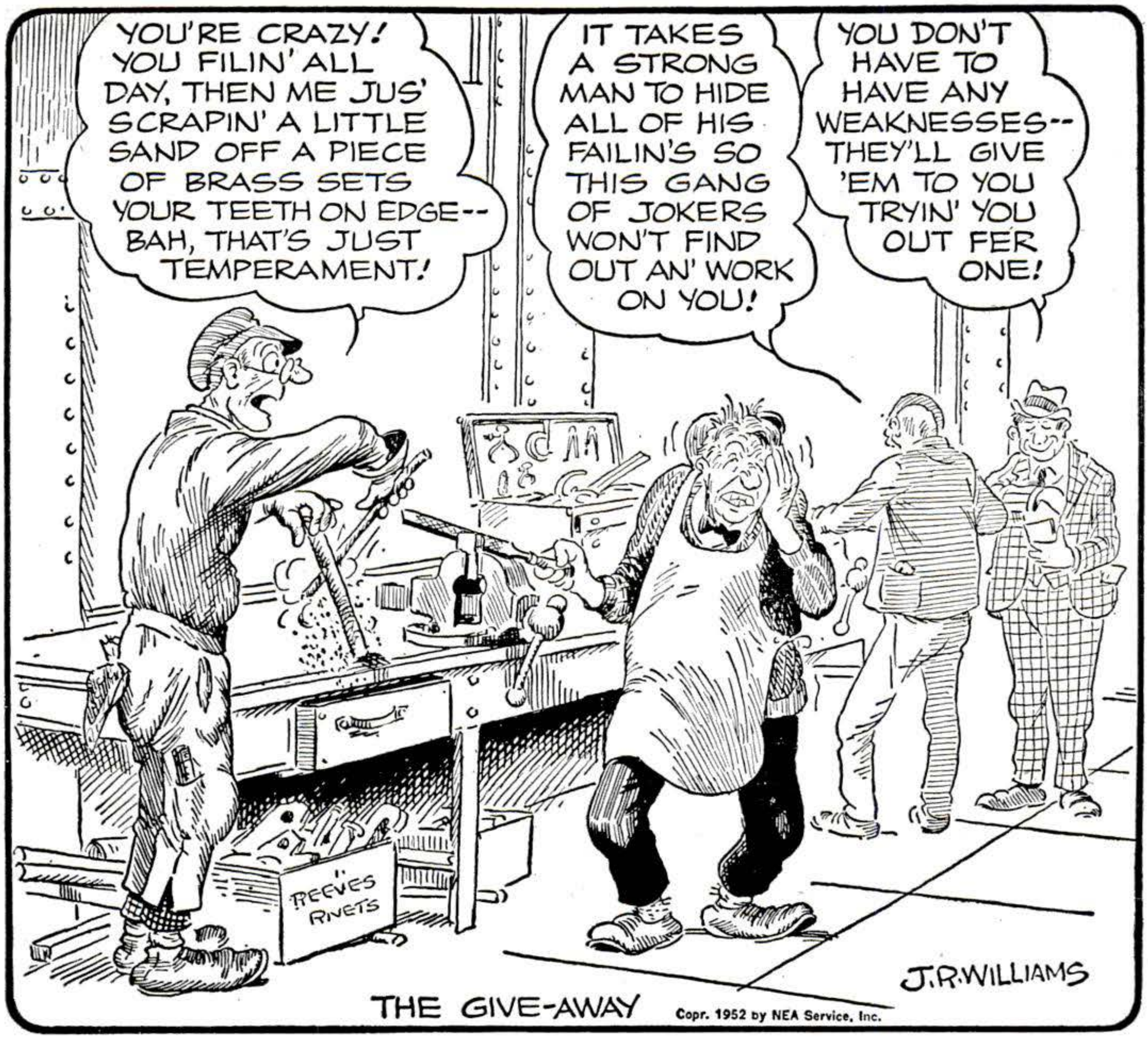
He Lived His Cartoons

But Jim Williams has never forgotten that he started as a machinist. For about seven years, Jim worked in machine shops in Alliance, Ohio. Everybody did everything in the shops in those days, and hardly anybody did the same thing two days in a row. At the Alliance Machine Co., Jim sank dies, made patterns, even worked on a 430-ton crane that was then the largest in the world. He has hung a framed picture of that crane in his home in San Marino, Calif.—more than he has ever done with any of his cartoons.

To find a representative selection of Williams' cartoons, though, you do not have to go any farther than the bulletin board of the nearest machine shop. Shop workers have been avid collectors of his cartoons for 30 years. Jim has drawn about 2,500 shop pictures to date, and the demand for reproductions is so great that a special service has been set up to handle shop requests for "Out Our Way" calendars and blotters. And men in the mechanical trades have nicknamed just about every shop foreman in the business after the flap-footed, baggy-pantsed, beer-bellied "Bull of the Woods" in the cartoons.

The Bull was modeled after Jim Williams' foreman at Alliance. He used to stalk through the shop, head down, hands locked behind his back, with a magnificent scowl on his homely face. In those days, belt drives were standard equipment and the thousands of belts running down from the ceiling made a shop look like a forest. The Bull got his name one day when Jim Wil-

Copyrighted material



liams was standing idly at his machine (dreaming, probably, or maybe even drawing) and the foreman suddenly charged out from the mass of belts, looking like a bull coming through the woods.

20,000,000 Chuckles a Day

Shop life isn't the only string to Jim Williams' bow. He also keeps a cartoon series going on cowboys, as well as several variations on the general theme of family life, labeled "Why Mothers Get Gray," "Born Thirty Years Too Soon," and "Heroes Are Made, Not Born." Among them, they attract some 20,000,000 readers.

Williams has acquired this vast and loyal following by dealing with familiar, everyday happenings. The chuckle-a-day that he produces comes from situations close to his readers' own experience. His characters look, talk and act like human beings. His cowboys are not fancy-dressing, guitar-strumming, six-shooting heroes; they're simple, easygoing hard-working men. His shop workers are not automatons in white smocks on a production line; they're individuals in grimy overalls.

Jim was born in Nova Scotia and grew up in Detroit. At 14 he went to Mt. Union College, where he played on the football team and studied art—without much enthusiasm. He quit school after a year and took a job as a fireman on the Pennsy until he had enough money to head west. In Kansas he became a mule-skinner. In Arizona and New Mexico he worked as a ranch hand and camp cook. In Oklahoma he enlisted in the cavalry and became light-heavyweight champion of his outfit.

After his enlistment was up, Williams was married and went to work as a railroad baggage-smasher in Chicago. This hardly kept the bride and groom in coffee and cakes, so Jim became a professional prizefighter. He was doing all right as a ham-

[*Continued on page 246*]

"Little Black Box" Now Catches Speeders

Radar watches Connecticut roads for traffic violators, but that is only one of the highway jobs it is doing.

By Wesley S. Griswold

ON CONNECTICUT'S Merritt Parkway a few weeks ago a motorist was blithely zipping along at 70 miles an hour in a 55-mile-an-hour zone. He knew he was speeding, but he had a relaxed feeling about it: frequent glances at the rear-view mirror had convinced him that no patrol car was trailing him. It was a bitter surprise, therefore, when a state trooper suddenly stepped out and waved him to a stop.

"What's your hurry, Mister?"

The driver blamed a sheepish passenger in the back seat, who, he explained, had forgotten his false teeth. They had had to go back for them, and were hurrying to get to work on time.

They Always Wonder

The excuse was most unusual but the driver's next remark wasn't. "Say, what makes you so sure I was speeding?"

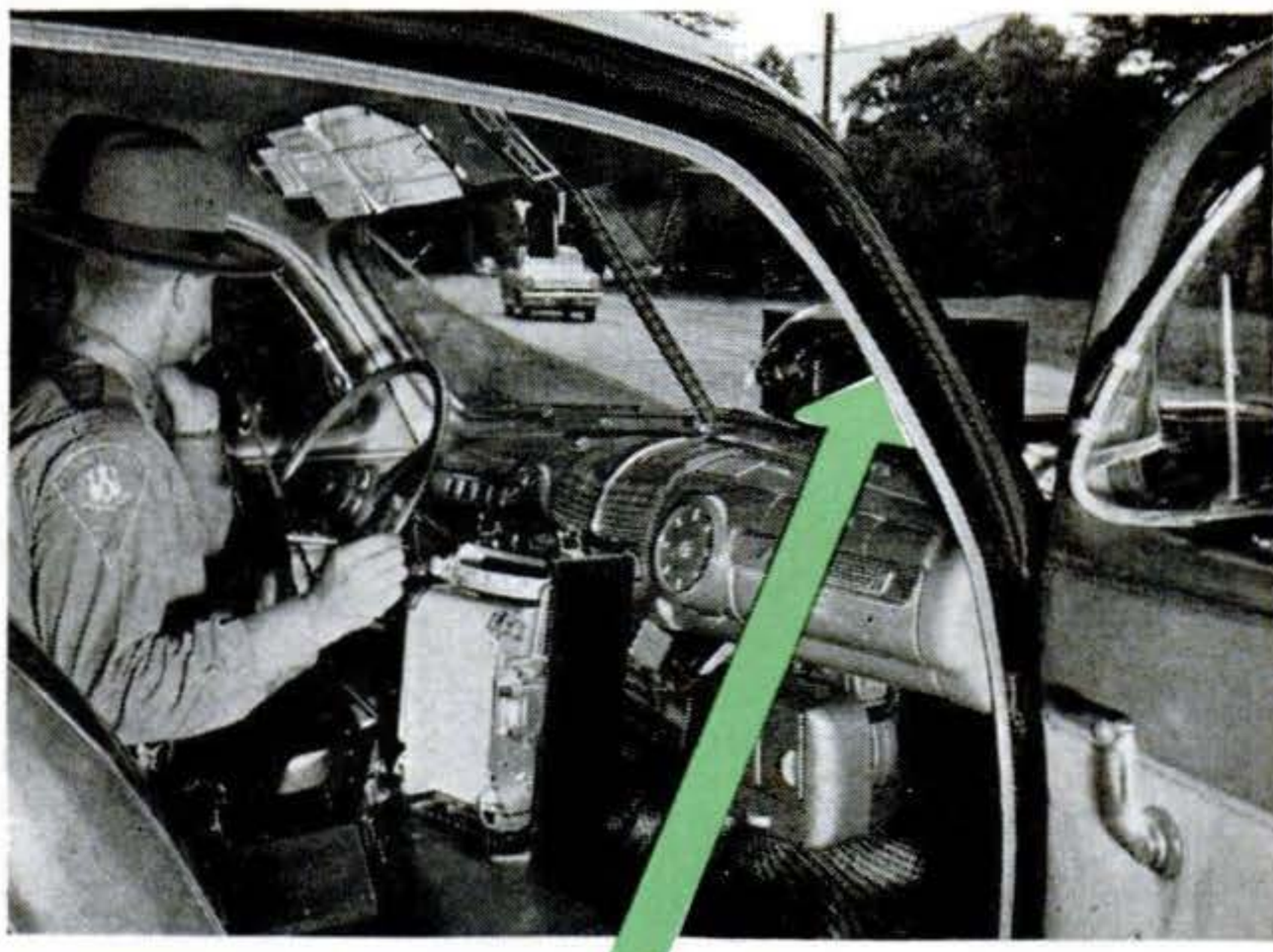
"Radar," the trooper grinned. "We've got a little black box back up the road a bit that caught you at it."

Despite their avowed hurry, the driver and his friend wanted to be shown. The trooper drove them back 1,000 yards. There, parked inconspicuously under the trees, stood another police car, a trooper behind the wheel. On the left front fender rested a plastic-faced black metal box.

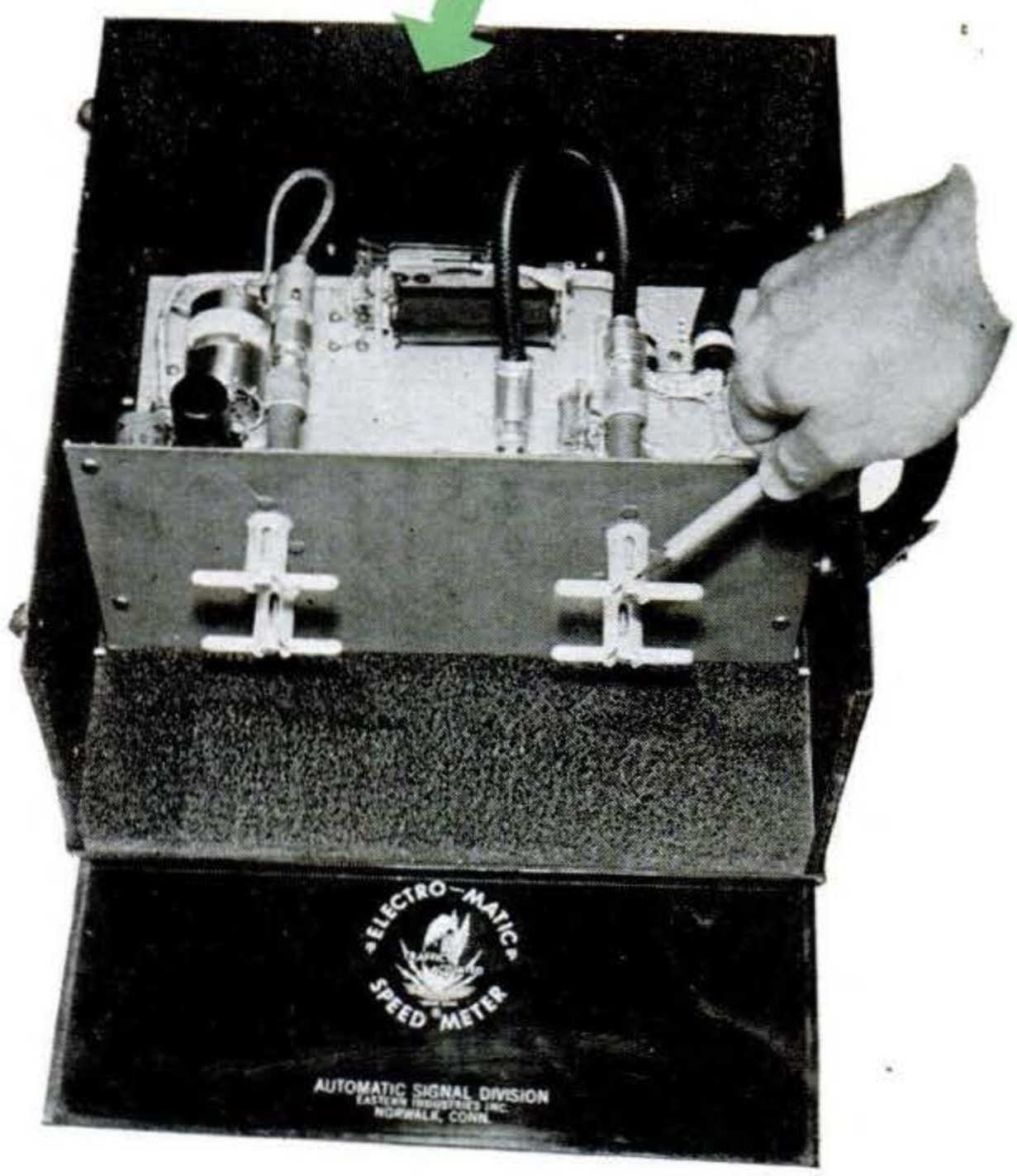
"That's what nabbed you," the trooper told the speeder, pointing to the box on the fender. "It told me how fast you were going. I took down your license number and called Al, here, on my short-wave radio and told him to stop you. It was that simple."

Two of these "little black boxes" and assisting policemen have caught nearly 3,000 speeders in Connecticut since 1948. About 450 have been arrested and penalized.

[Continued on page 280]

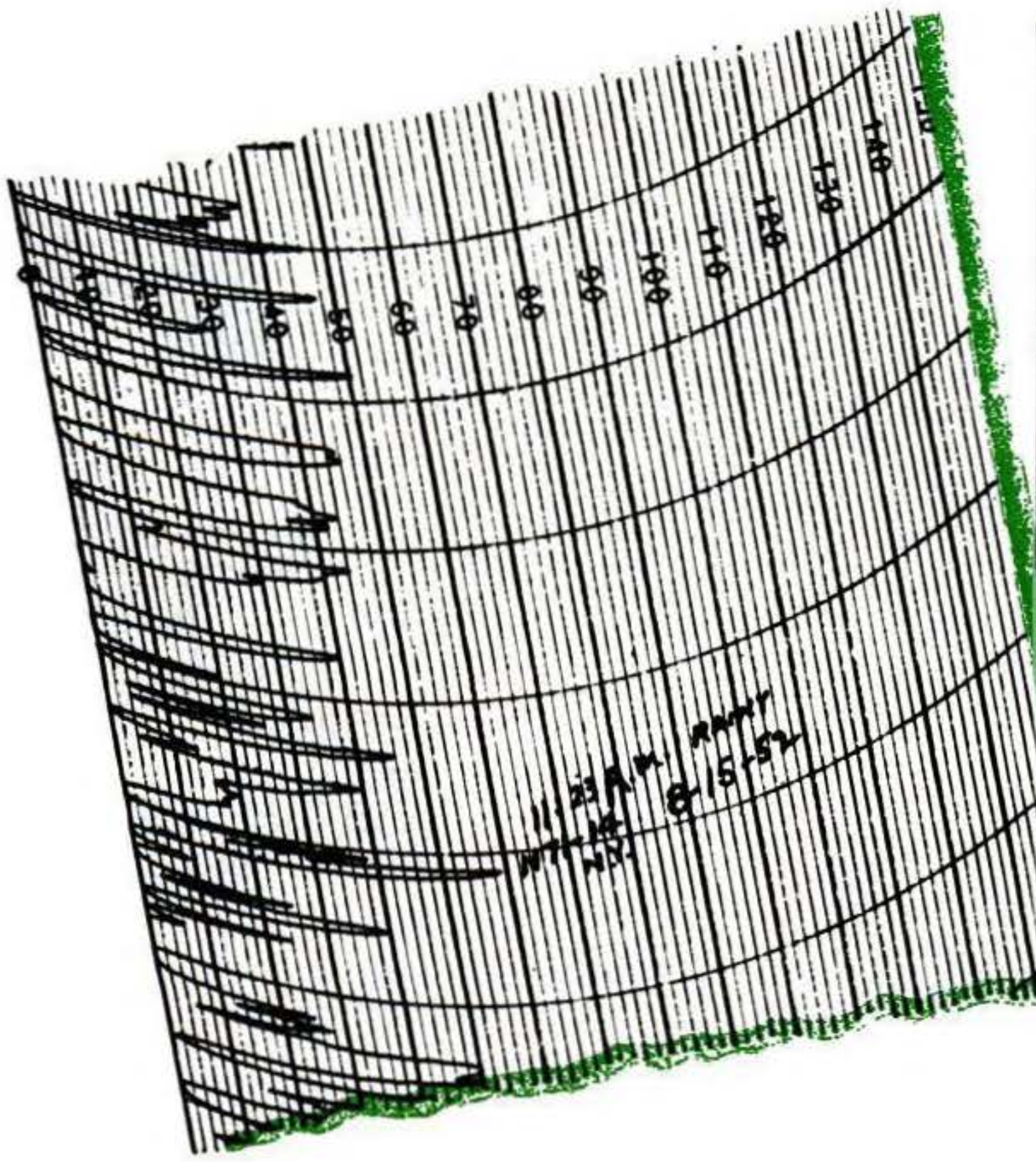


1 DETECTED at 150 feet by the radar transmitter-receiver, and his speed recorded, a law-breaking driver heads for trouble. Below: Pencil points to radar transmitting antenna.



Copyrighted material

2 CAUGHT a mile down the road by another state trooper, who was tipped off by the first one by short-wave radio, the surprised driver hands over his license. Earlier he had flashed past a road sign similar to the one at right, which, if heeded, would have kept him out of trouble. Connecticut always gives drivers fair warning of a radar speed check.



3 THE EVIDENCE against the offending driver is shown to him by state troopers, one indicating the graph (left) made by the radar set, which runs on an auxiliary car battery.

Copyrighted material

Magicians Scoff

An illustrious master of the art of illusion believes that our imaginations have been working overtime ever since the A-bomb showed us what science can do.

By John Mulholland

AFTER dealing with optical illusion for close to 40 years, I have become downright suspicious of purely visual evidence, especially when it concerns any unfamiliar object. And that goes double for flying saucers.

Any trained magician, you will find, will agree with me.

A magician achieves his effects not because the hand is quicker than the eye—it isn't—but because the eye is easily tricked into seeing what it expects to see, what the mind tells it to see.

Magic is a maze into which the magician lures his audience. He adds extraneous details to clutter and confuse their minds. Then he leads them, by misdirection, to take the wrong turn. For it is not only our eyes that play tricks on us. Memory, too, leads us astray.

Again and again, after one of my shows, members of the audience have come backstage to compliment me on a trick I did not do. Sometimes the trick they describe combines a part of one trick with a part of another, adding up to a feat no magician has ever accomplished.

I have followed avidly the amazing accounts of "green fireballs," "brilliant orange-red disks," and "glowing white lights" sometimes standing still, sometimes traveling over our heads at supersonic speeds. In most cases there is no doubt about the integrity of the men who report such phenomena; but how widely they differ on what they have seen and in their attempts to explain it!

John Mulholland's exhibitions of magic in more than 50 countries have mystified millions. He is a member of the chief magic societies in America, honorary vice-president of the Magic Circle in England, honorary life member of the Magicians' Club of India, author of *The Art of Illusion* and other books. In this article, this celebrated deceiver of delighted audiences gives his frank opinions on flying saucers.

The Venusians Are Coming

Some say the saucers have been weather balloons. Others suspect they are secret weapons. And a group called Borderland Sciences Research Associates of San Diego, Calif., states unequivocally that: "Most of the disk-shaped craft come from the etheric regions of Venus . . ."

I cannot actually disprove these or any of the other ingenious theories that have been advanced. *But they cannot all be true.*

Hallucinations are commoner than you may think. An inquiry conducted by the Society for Psychical Research revealed that more than 10 percent of the people polled had experienced at least one hallucination while they believed themselves to be fully awake and in normal health. "These hallucinations," the report added, "are more frequently visual than auditory." You have probably noticed that most flying saucers are oddly silent—few saucer spotters seem to hear any noise.

In everyday life, as in magic, our minds are constantly interpreting what we see. Some years ago, as a publicity gag, a jewelry store displayed in its window a gigantic "diamond" solitaire. It was as phony as Junior's pearl-handled shooting irons, yet thousands stopped to admire it before a jewel expert happened by and spotted the hoax. All the others had seen what they expected to see.

Let me give you an example of another kind of illusion: A friend of mine was driving alone through rural Vermont on a dark,

Copyrighted material

at Flying Saucers

Please turn the page the instant you see this picture . . .

Copyrighted material

How many saucers are in the picture on the preceding page?

If you counted right at a glance, your eyes are sharper than average. But can you say how big they are? And how far away? (They range from five inches to a foot in diameter, and none of the saucers is more than eight feet from Mulholland's right hand.) This is an unretouched PSM photo showing John Mulholland making actual saucers "fly." How did he do it? A magician never tells.

rainy night, when his car broke down. He found shelter in an isolated farmhouse. His host showed him to a bedroom lighted only by a kerosene lamp. My friend, an inveterate reader-in-bed, found a discarded shoe box in the closet, tore a hole in the top, placed it over the lamp chimney as a shade, and settled down to read.

When, at last, he put his book aside and turned off the lamp, he sat up with a start of horror. Floating over the bed, bathed in a weird bluish light, its outline unmistakable, was a coffin. For a time he lay there too scared to move. Then he said to himself sternly, "John (meaning me) claims there is a rational explanation for everything." And he got up to investigate.

His spine soon defrosted. The lamp was not quite out. With the wick turned way down, the tiny blue light remaining threw on the ceiling the apparition of the coffin—roughly the shape of the hole in the improvised lamp shade. The rest was imagination.

Ever since Hiroshima, we have all suffered from the jitters of the Atomic Age. Our imagination has been working overtime. And—"imagination is the mother of superstition." What! Do I think then that flying saucers are only a Twentieth Century superstition? Yes, I do. A superstition peculiarly suited to the times we live in. I believe there have always been unexplainable phenomena occurring in this world of ours —unexplainable because of our imperfect understanding of natural laws.

In less scientific ages, people believed in and *saw* fairies and elves, dragons, mermaids, vampires, werewolves, leprechauns, ghosts. Scores of sailors have sworn they saw that spectral ship, the *Flying Dutchman*, off the Cape of Good Hope. And remember the tales of the Loch Ness monster?

More Stories, More Saucers

Whatever the saucers are—mirages, meteors, lights reflected from the earth, or what not—they have probably been around for a long time. But in this era of instantaneous communication, what would once have been isolated, or unheard-of, incidents are now gathered overnight into an imposing mountain of evidence. And the more saucer stories fly around, the more people are going to be stimulated to see and report similar phenomena.

I could be wrong 100 per cent. Maybe next week a saucer will land on the earth and be put on exhibition where we can see it, touch it, examine it. Until then I shall go right on thinking that flying saucers are a state of mind—for four decades of magic have taught me that honest, intelligent, alert men and women can, by suggestion, quite readily be made to see things which aren't.

END

FLOATING COFFIN TRICK—one of Mulholland's famous feats of levitation—was inspired by the legend that the coffin of Mohammed rests suspended halfway between heaven and earth.

Now turn to p. 167, where Kenneth Swezey will show you how to create saucer-like illusions.

Copyrighted material

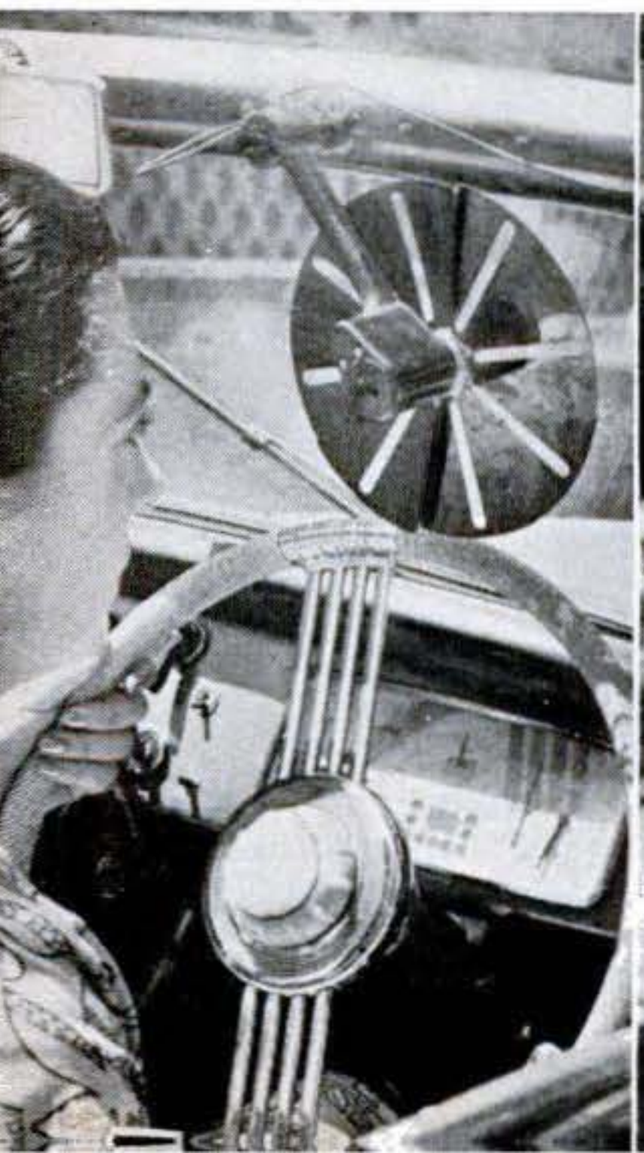
NEW IDEAS FROM EUROPE

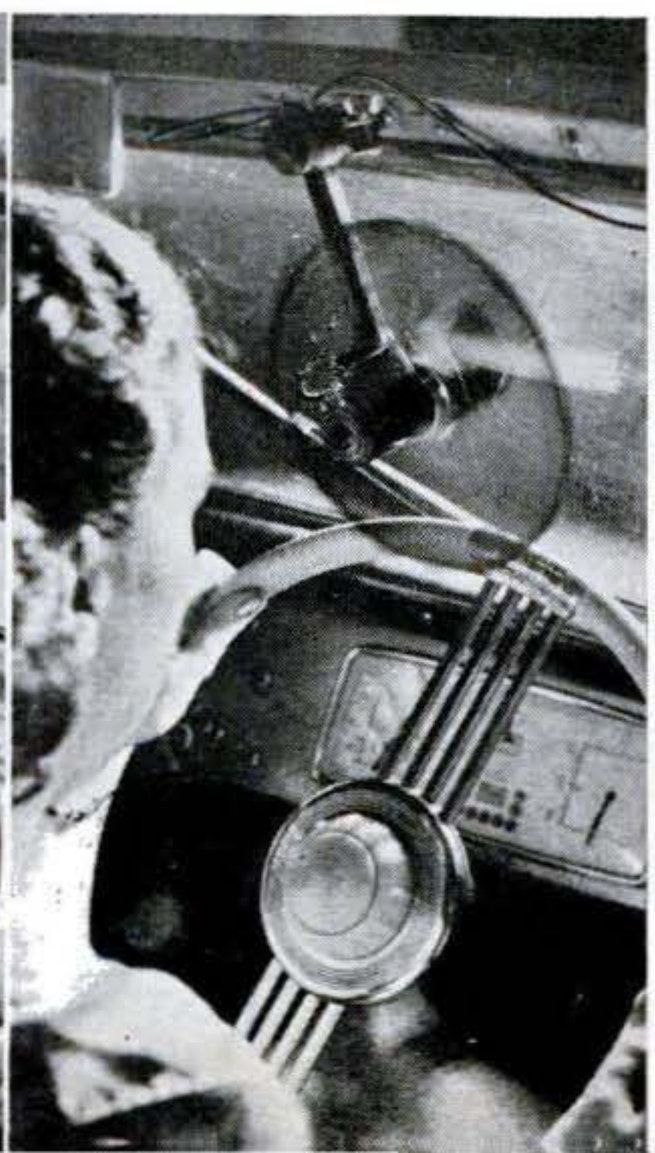
Alfa Romeo's New "Flying Disk" Knocks Off 155 M.P.H.

Now under test at the Alfa Romeo factory in Milan, Italy, the striking new 155-m.p.h. sports job above will be ready to make its bid for supremacy in the international racing field next year. Known as the "Flying Disk" because of its flat, rounded streamlining, the new Alfa's six-cylinder engine, with three dual carburetors, puts out 200 horsepower with a piston displacement of only 2,995 cc. (about 180 cubic inches).

"Pie Plate" Spins Out Glare

THIS rapidly rotating device interrupts driver's vision just long enough, says Italian inventor Santino Alassio, to cut glare from headlights or sun, yet permit a clear view of the road ahead. Made of opaque plastic divided into eight slotted sections, it is powered by a tiny electric motor.



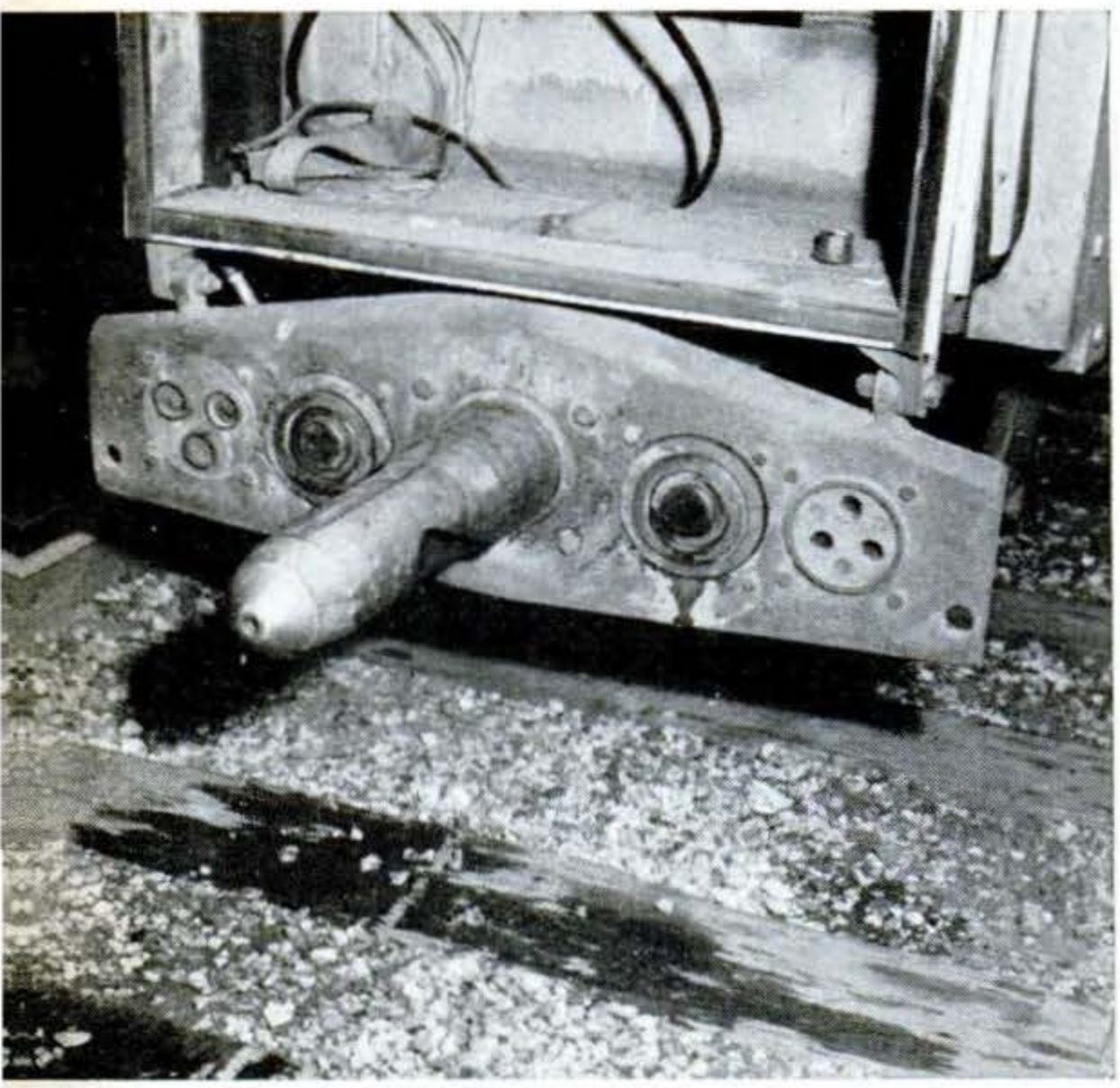


Three-Wheel Scooter Is Safer

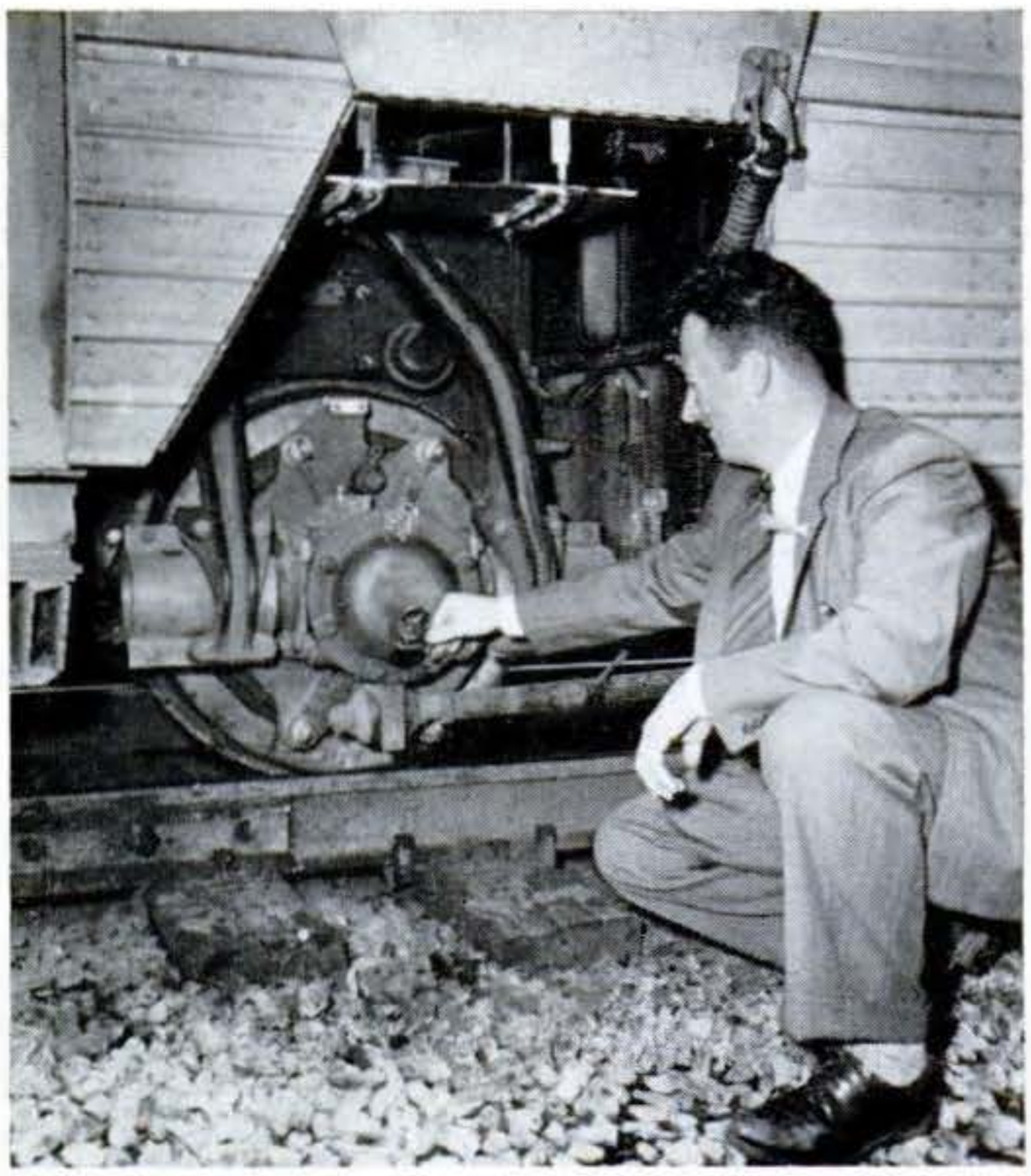
A MOTORIZED tricycle shown at a recent Munich, Germany, exhibition of vehicles for invalids, offers the added stability of two front wheels. Although designed primarily for the handicapped, it will also serve any scooter rooter who prefers to keep three wheels on the ground instead of two.

Will Railroads Use Wheelbarrow Coaches?

C&O says that this is the train of tomorrow and backs its claim with a million-dollar model.

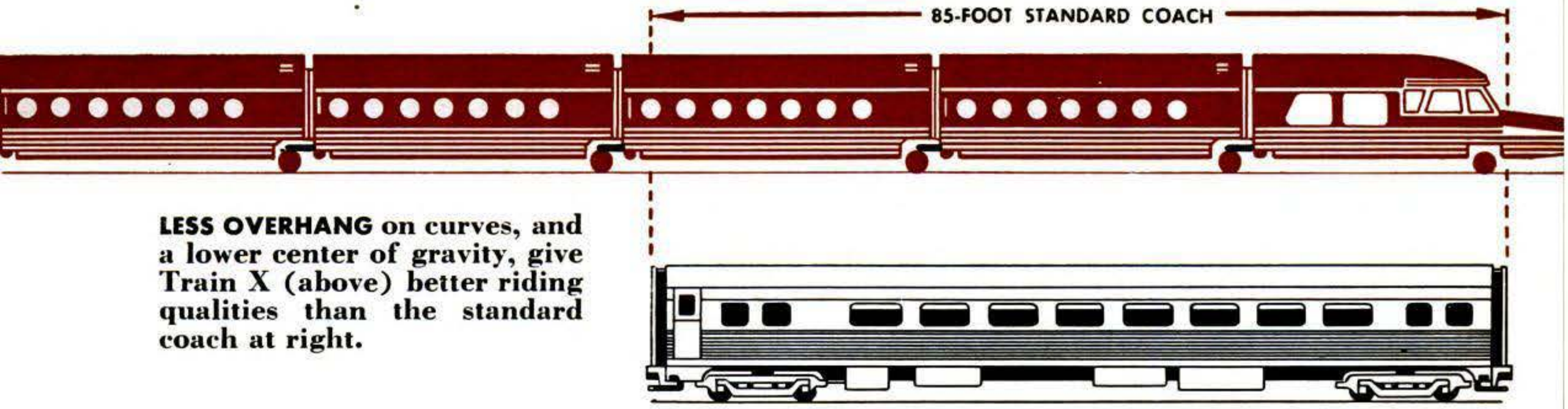


COUPLER SHAFT also provides a bearing surface for front of the car. All connections are automatic, reducing coupling time.



BRAKE presses against face of rubber-centered wheel. Axle is sprung to provide a pendulum motion for the car on curves.

Copyrighted material



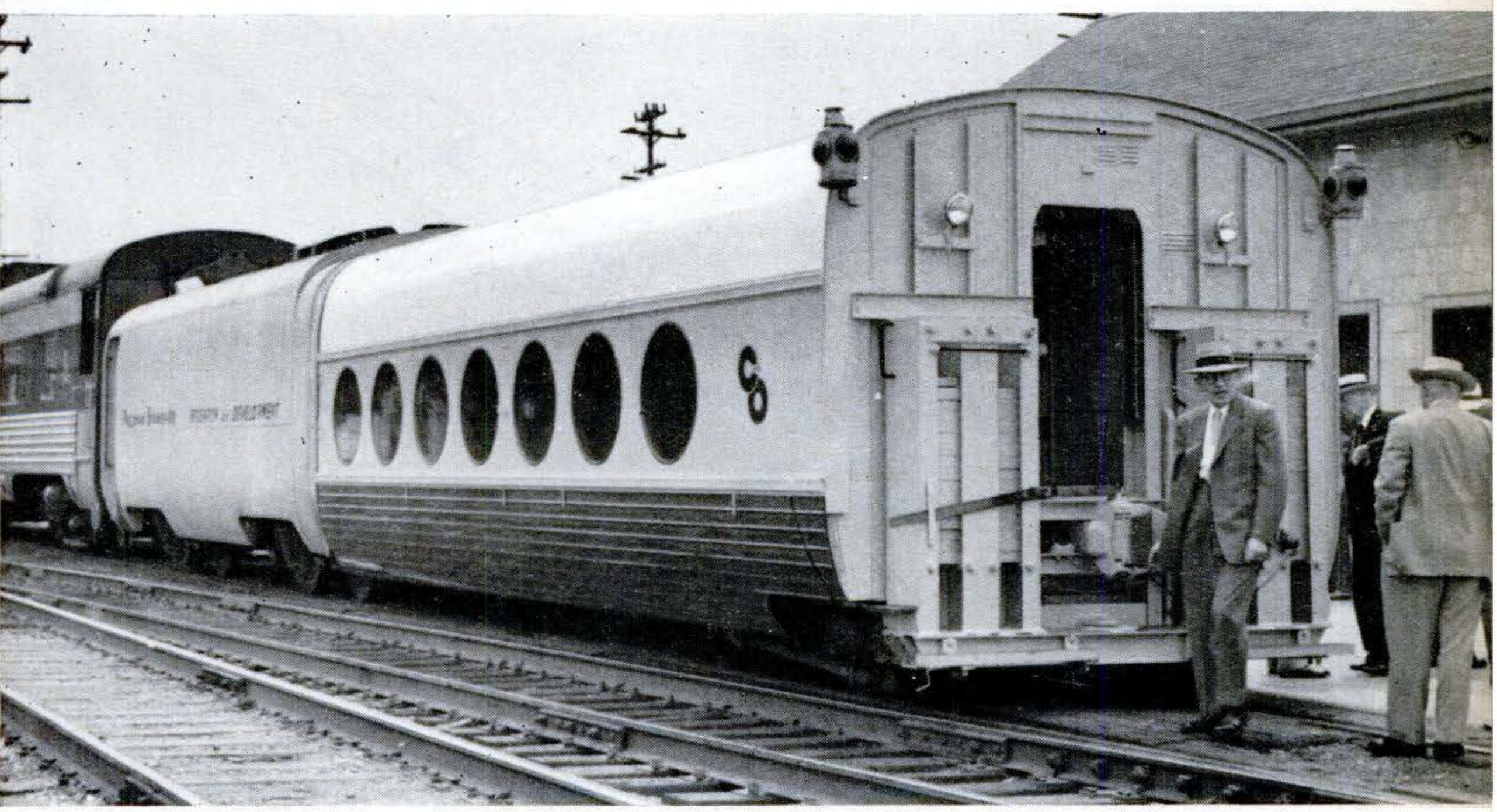
LESS OVERHANG on curves, and a lower center of gravity, give Train X (above) better riding qualities than the standard coach at right.

One-axle car pioneered by Chesapeake & Ohio will hug the rails at 140 miles an hour.

A PASSENGER train made up of wheelbarrow-like coaches, each riding on a single pair of wheels placed at the rear, and supported up front by a massive coupler connection to the car ahead, is well past the blueprint stage on the Chesapeake & Ohio Railroad.

The first of the "Train X" coach units, now undergoing road tests, is the most radical departure from standard design ever made by an American railroad. Only 10 feet high and 31 feet long—conventional coaches are three feet higher and measure 85 feet between couplers—the test car has unusually smooth riding qualities. C&O engineers predict that its trailing action will make 140-m.p.h. operating speeds practical and safe.

They also point out that flyweight construction will cut both production and operating costs. Today's standard, 76-passenger coach weighs about 110,000 pounds and carries a $140,000 price tag. Three of the Train X cars, seating 84 passengers, will weigh 34,650 pounds, cost about $47,000 and pay for themselves in less than four years.—*Henry B. Comstock.*



FIRST TRAILER COACH needs a specially built adapter car for road tests with standard equipment. A solid string of Train X cars will have better tracking characteristics than a single unit, particularly when coupled to a locomotive of new design.

Copyrighted material

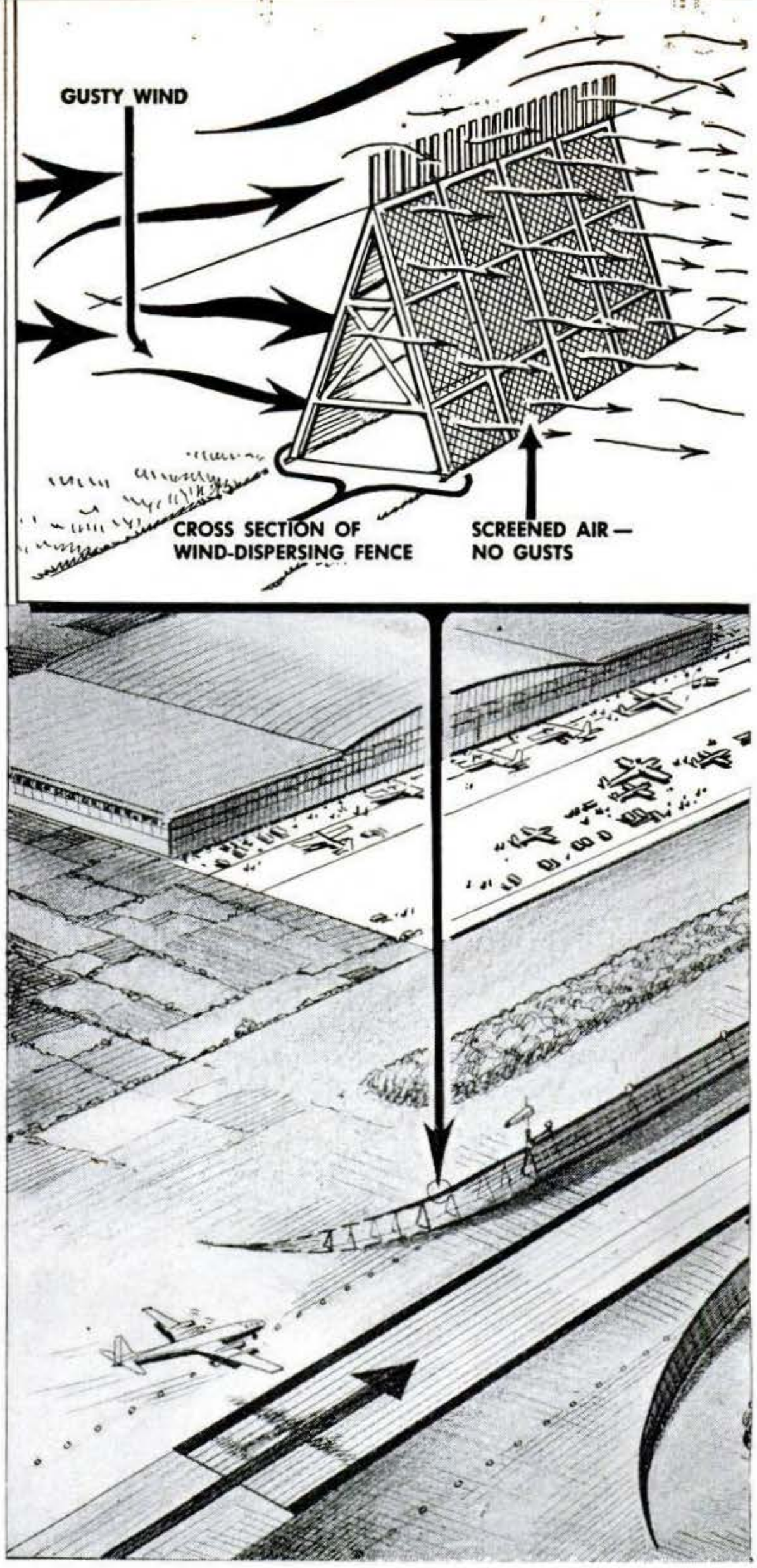
Single Runway Proposed as an Airport

AIRPLANES have grown up fast. As they take on weight and speed, airports have had to keep pace by building longer and longer runways. That wouldn't be such a problem if only one runway were needed. But cross winds, the bugaboo of take-offs and landings, demand a crisscrossing maze of expensive concrete strips.

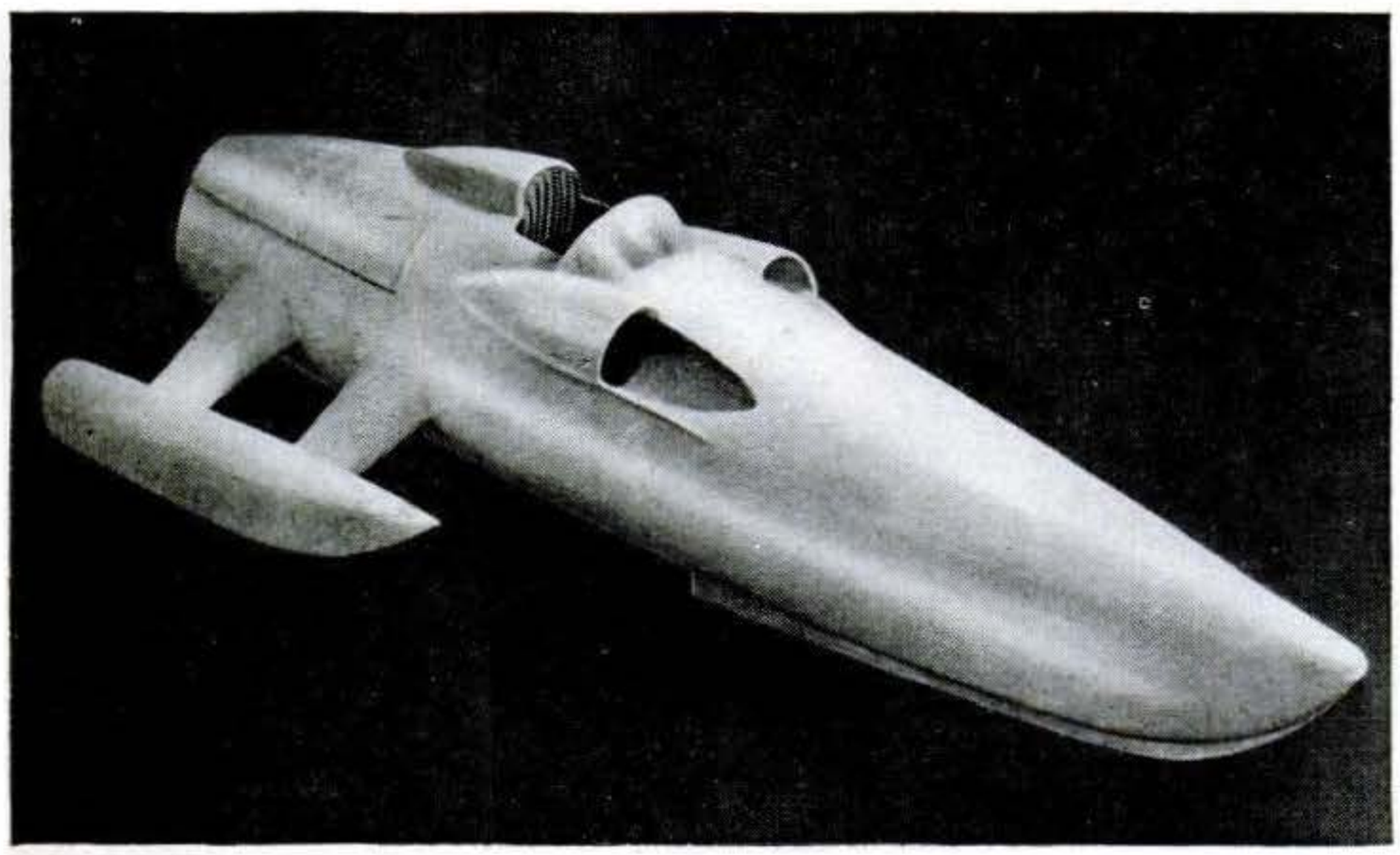
Now a solution has been suggested by aviation engineer Assen Jordanoff: the single-runway Strato-Port shown at right. Fences along both sides of the 10,000-foot runway would take care of cross winds by absorbing troublemaking gusts, as illustrated in inset at upper left of the drawing.

In the middle of the runway there would be an elevation, or bump. Planes would land toward this bump, which would slow them down as a hill slows a car. They would take off from the bump, downhill, gaining acceleration. Results: shorter runway distances for both landing and take-off; greater safety because treacherous cross winds would be practically eliminated.

Another advantage claimed by Jordanoff for his Strato-Port is that all airplanes would take off from one location—a convenience to passengers.



While British Build Jet Boat,



JET propulsion may put speed boats in the 200-mile-an-hour class. That is the goal of John Cobb's Crusader (model at left). Being built in England, it will be powered by a Ghost engine, the type used in the famed Comet jet airliner. Meanwhile, however, U.S. sportsman Stan Sayres stands on his propeller-powered record of 178.497 m.p.h. set recently in Seattle (right).

Copyrighted material

RAISED EXIT AND ENTRANCE FOR PLANES

RUNWAY

TREES ARE ADDITIONAL WINDSCREEN

WIND DIRECTION

UPHILL LANDING GIVES BRAKE EFFECT

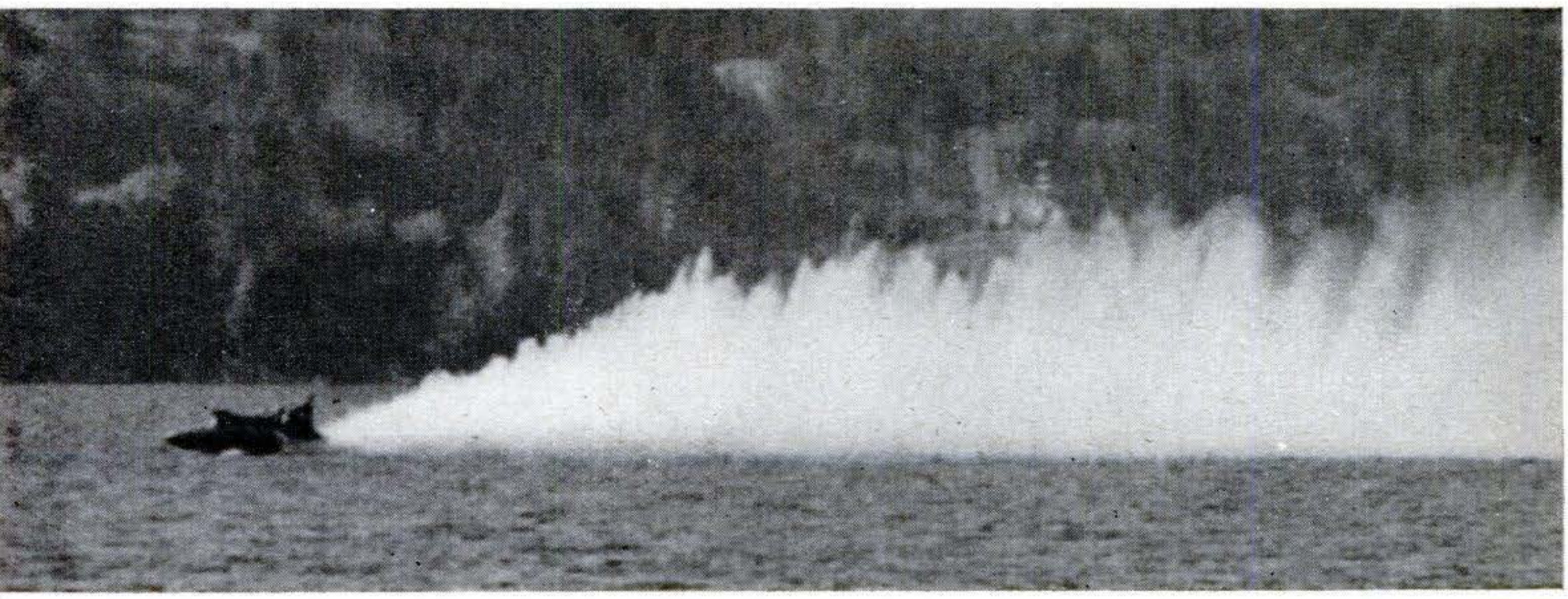
DOWNHILL TAKE-OFF GIVES EXTRA ACCELERATION

LANDING

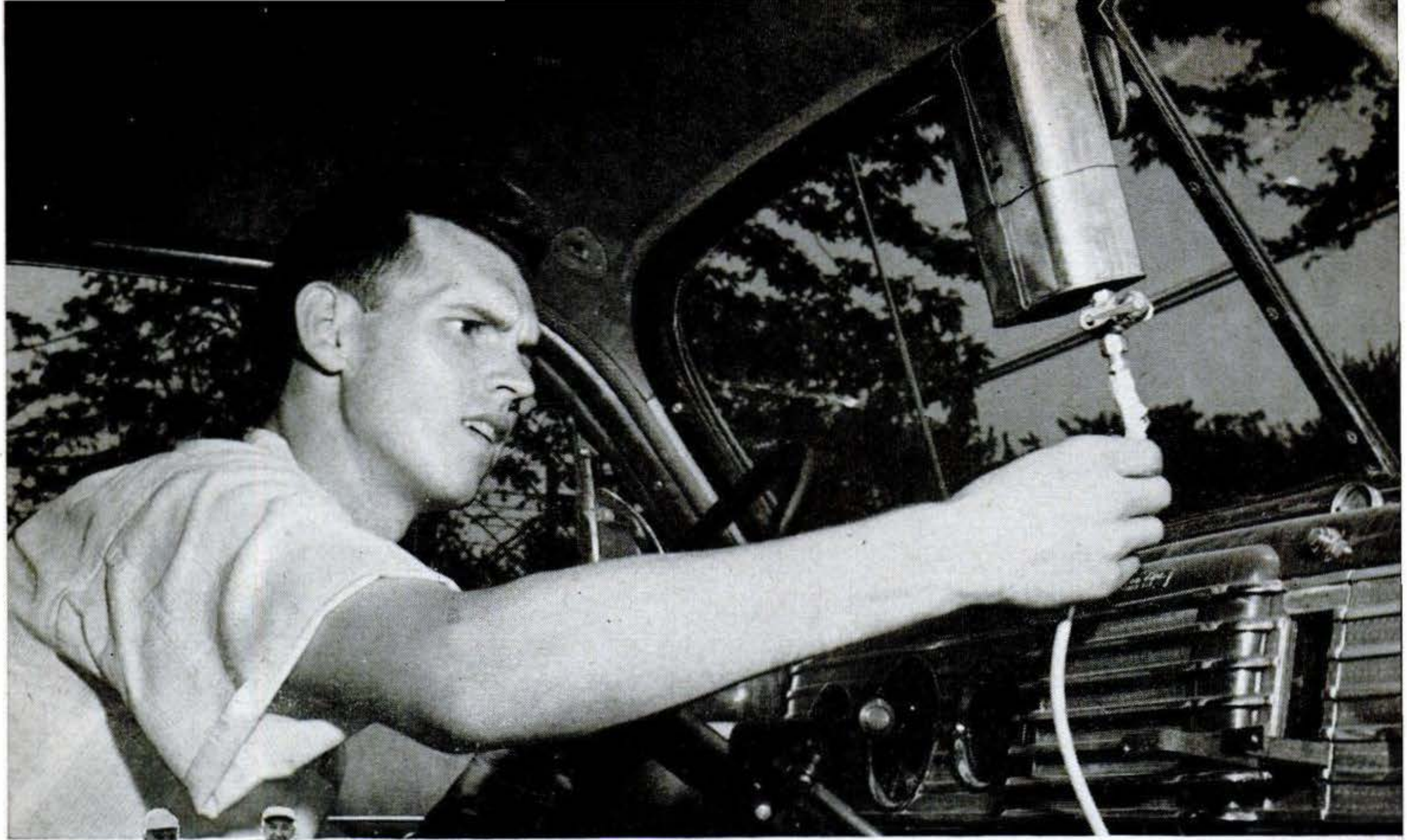
RAISED CENTER

TAKE-OFF

U.S. Prop Job Sets 178-M.P.H. Record

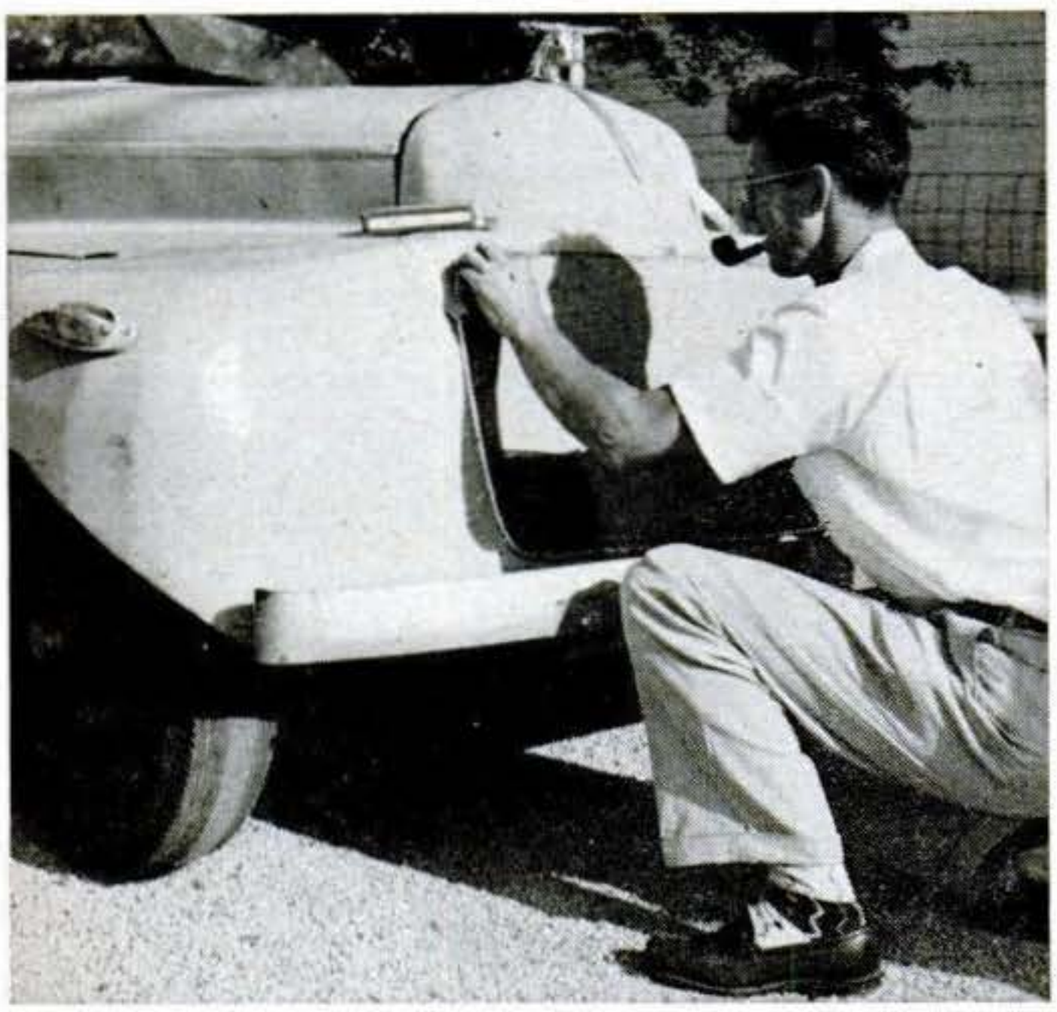


Copyrighted material



CONTESTANTS in Shell "mileage marathon" get one gallon of gas in tank like this piped to carburetor. At end of run, remaining gas is weighed, mileage computed. Car with teeth (left) has won last two years.

How to Go 168 Miles on a



ONE WAY TO BOOST MILEAGE is to block off radiator. Top car in 1951 and 1952 had compression ratio boosted from 4.3 to 6 to 1, 33-inch instead of 30-inch tires.

THOSE engineers in Wood River, Ill.—remember them, the fellows who go so far on a gallon of gas?—have been at it again. This time they managed to average 168.49 miles to the gallon in a 1924 Chevrolet.

These dream-world displays of efficiency have been going on, except for the war years, since 1939. They take the form of an annual contest among engineers and scientists at a Shell Oil research laboratory.

Getting eight to 10 times the normal gas mileage is really no trick. You yourself can do it—with practice. All you do is:

Plane down your cylinder head to boost your compression ratio;

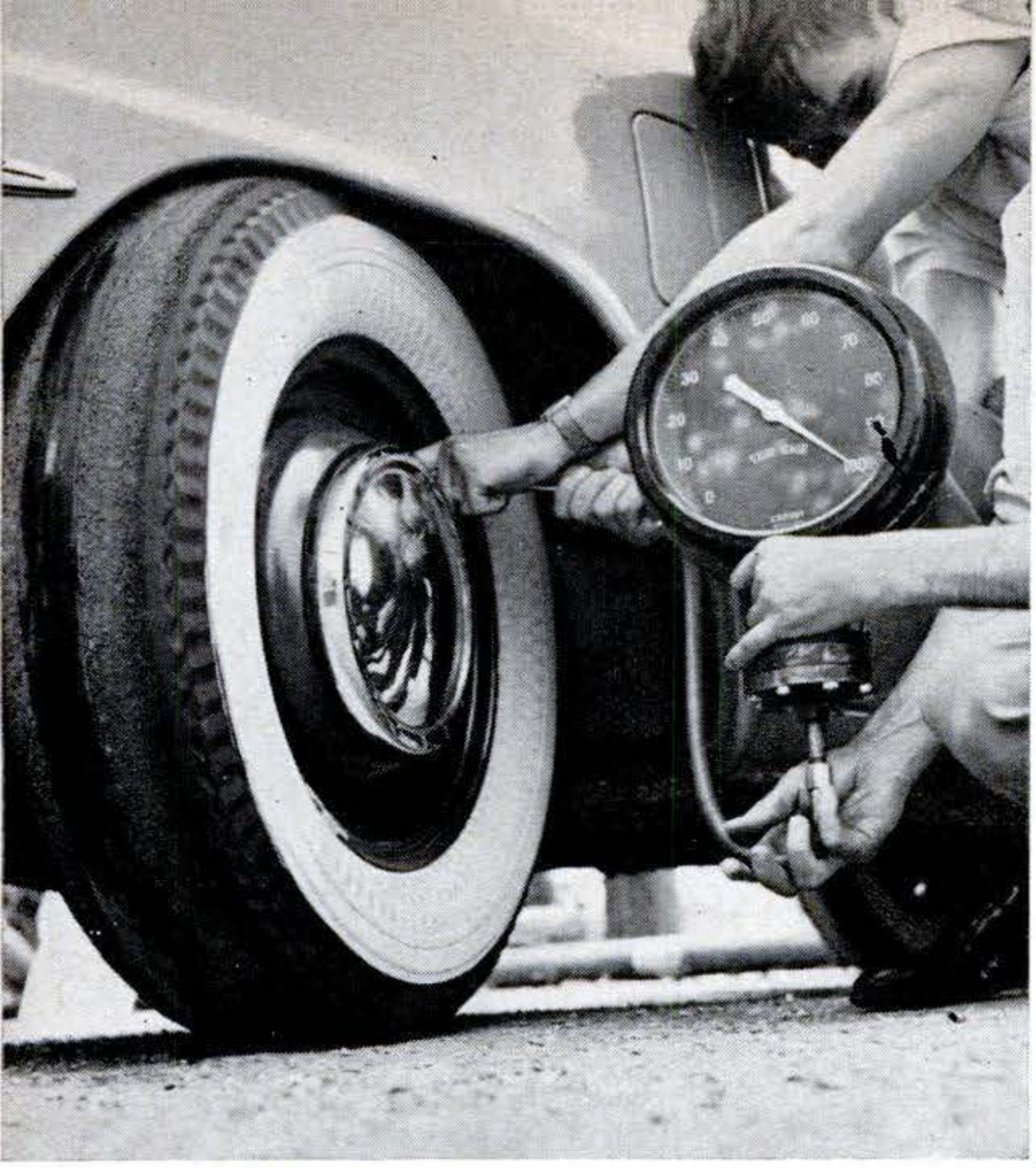
Rework your gearbox and change your rear-axle ratio;

Disconnect your fan, generator and all other power-consuming accessories;

Shield your radiator to cut wind resistance;

Super-tune your ignition and carburetion;

Copyrighted material



"ROAD FRICTION" is reduced almost to vanishing point by contestants. This low-pressure tire, most of tread filed off, registers 100 lb. pressure, will get a few pounds more.

Gallon of Gas

Pump up your tires to 110 pounds and file down your tread.

Then accelerate in high to 20 m.p.h., cut your ignition, coast to five, re-start, and repeat for 12 miles. (For more practical tips on how to save gas, see page 175.)

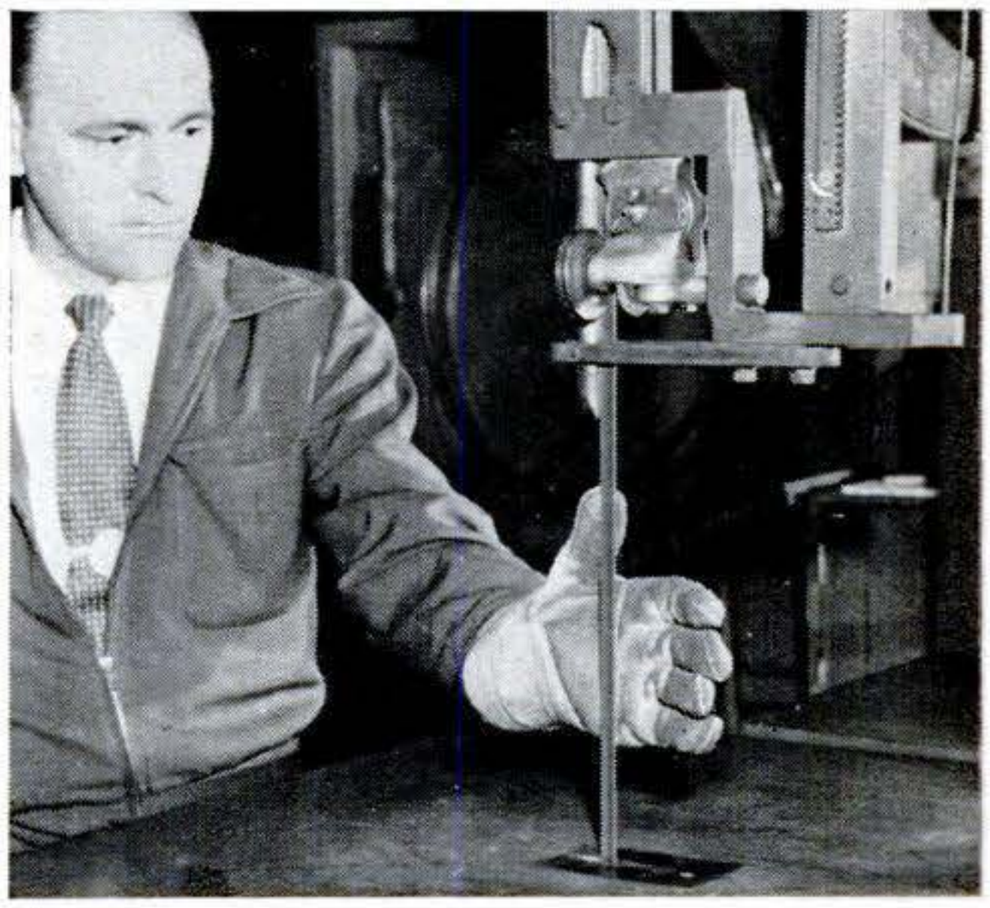
That's all that the winners, Dave L. Berry and Fred Schutte, did. With a penalty handicap for weighing less than 3,500 pounds, their corrected figure was 146.98 miles per gallon. Their speed averaged 11 m.p.h.

The same team won last year with far lower mileage, because of a rougher course. The all-time corrected high—149.95 miles per gallon—was set by Dr. R. J. Greenshields, in 1949 with a '47 Studebaker.

This year there was a new class for drivers with "less than professional instincts,"—a nice way to describe rank amateurs—who had to average 30 m.p.h. It was won by a Nash Rambler at 64.48 m. p. g. END

Airport Radar Gets TV Assist

TELEVISION tricks are put to work in this new radar for airports. The big viewing screen is a standard 30-inch TV picture tube. On it technicians see pips representing nearby planes superimposed on a detailed map of the airport. This is not a radar map but an electronic enlargement of a drawing that shows all the details, including structures, mountains and other obstacles. The map is fed to the screen from a small glass slide by a flying-spot scanner, much the way TV commercials are fed to home receivers from a broadcasting station. The system was developed by Du Mont in collaboration with the CAA.

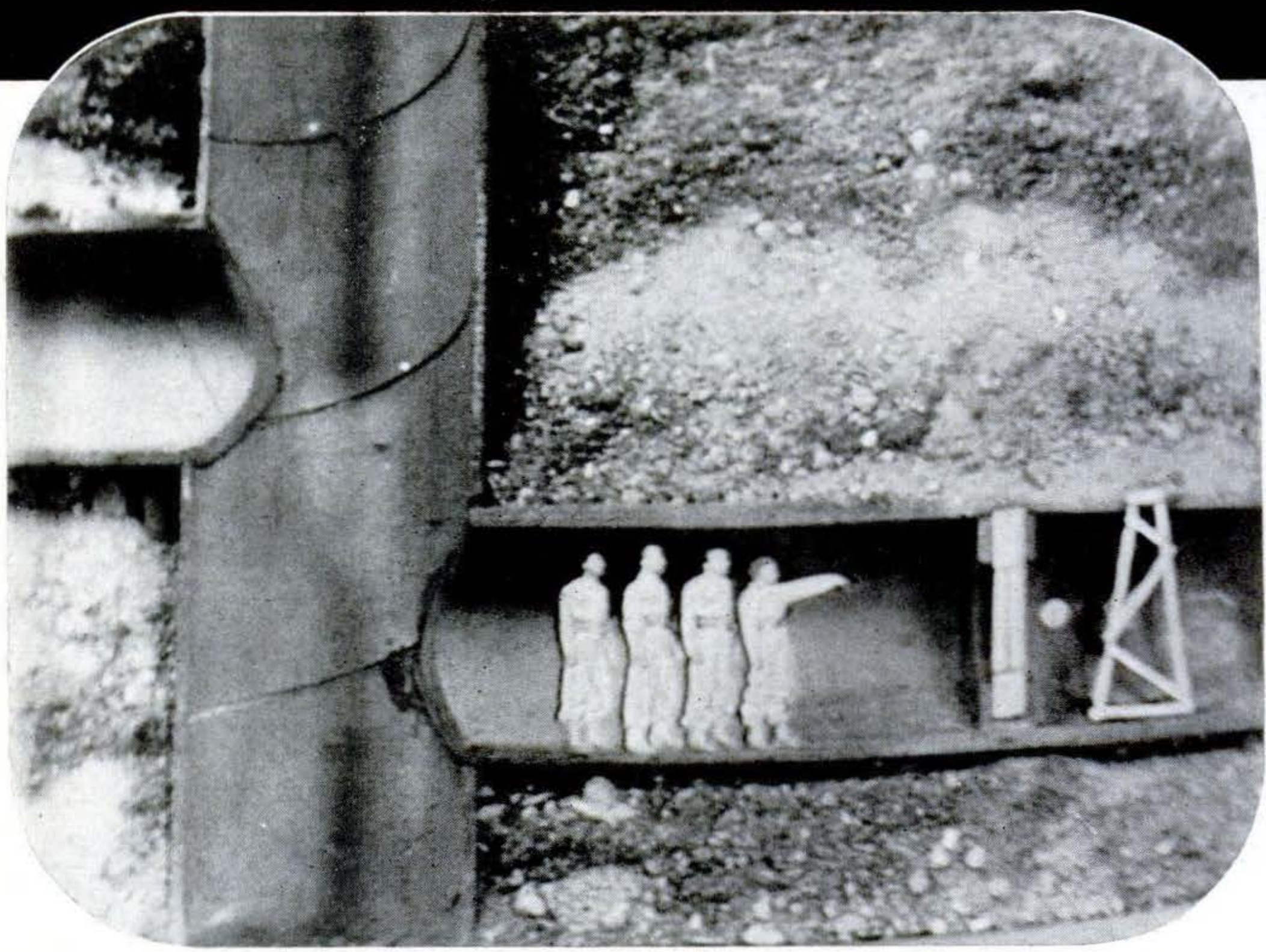


Box Straps Make Saw Blades

TRYING to reduce his company's bills for bandsaw blades, Jack Prince, Solar Aircraft engineer, tried using ordinary steel box strapping. It bit rapidly into stainless steel and alloy sheets, lasted 10 times longer than toothed blades, cost but a dime. The strapping burns its way through by frictional heat.

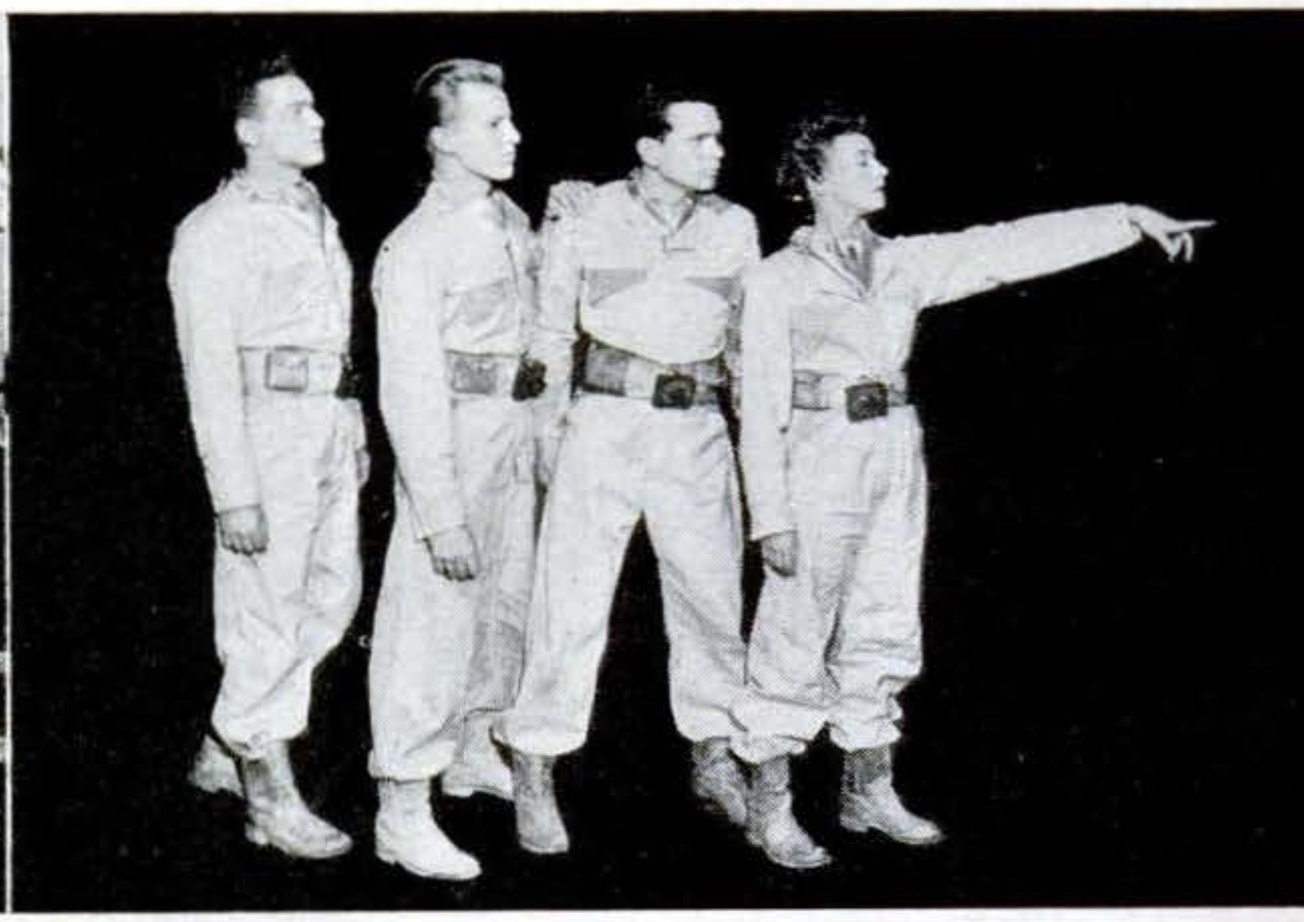
Copyrighted material

How TV Tricks



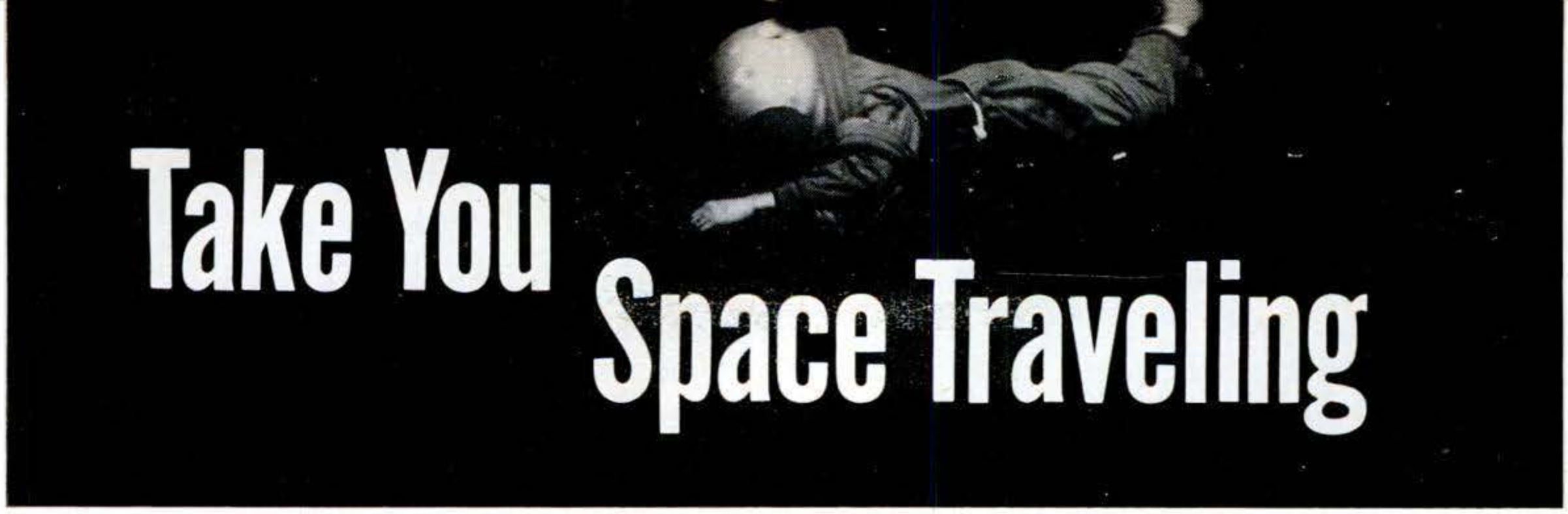
Actors walk in tunnel under moon. How it's done is shown below.

1 CUTAWAY MODEL simulates shaft and tunnel under moon's surface. George Gould, director of *Tom Corbett, Space Cadet*, shows where actors are to appear. Camera is close.



2 ON BLACK-DRAPED SET actors walk in single file as they would in the tunnel. Jan Merlin, Al Markim, Frankie Thomas and Margaret Garland look like this on the set.

Copyrighted material



Take You Space Traveling

Men float in space, extinct monsters live, and spaceships explode in studio-created science-fiction universes.

SCIENCE-FICTION fans some time ago saw a tyrannosaur attack a spaceship. Over the pilot's shoulders they watched the monster claw at the ship's port, its fanged head big as a man's body. It was undeniably alive.

On the moon, a rash young space cadet jumped up carelessly. His leap sent him 20 feet off the surface, over the heads of his fellow cadets. The camera followed him as he spun about, arms windmilling, and slowly fell under the moon's feeble gravity.

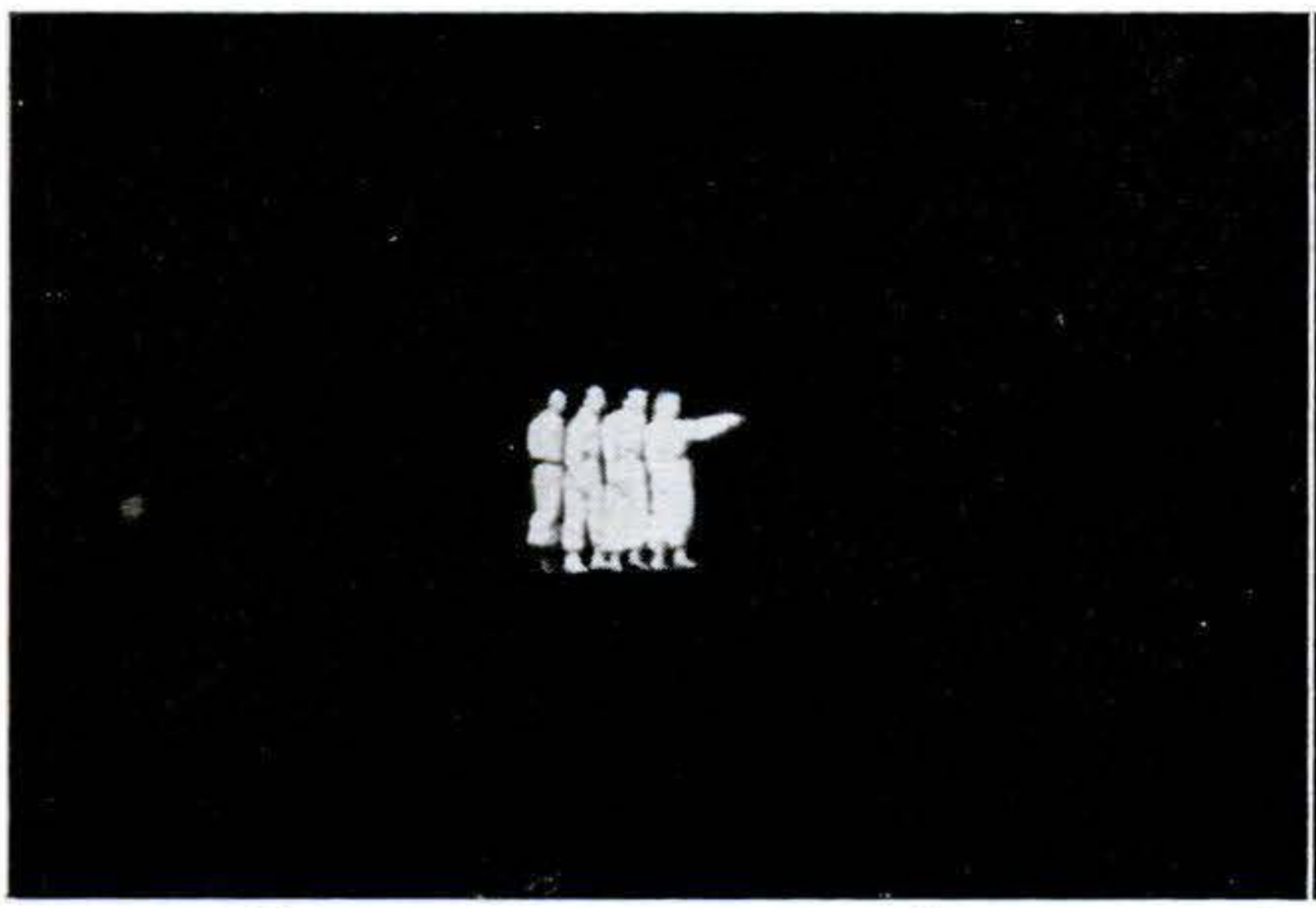
Pulling no dramatic punches, science-fiction scripts call for many such bizarre effects. But in television, the impossible just takes a little longer. Two technical tricks create most stunts: moving the image, or superimposing it.

The picture signal from a TV camera can be turned upside down by throwing a switch, tilted or rocked by tilting the camera itself, or turned at any angle by a trapezoidal prism. The prism can give anything from a slight tilt to a complete flip-over, or it can be turned around and around to make the picture spin.

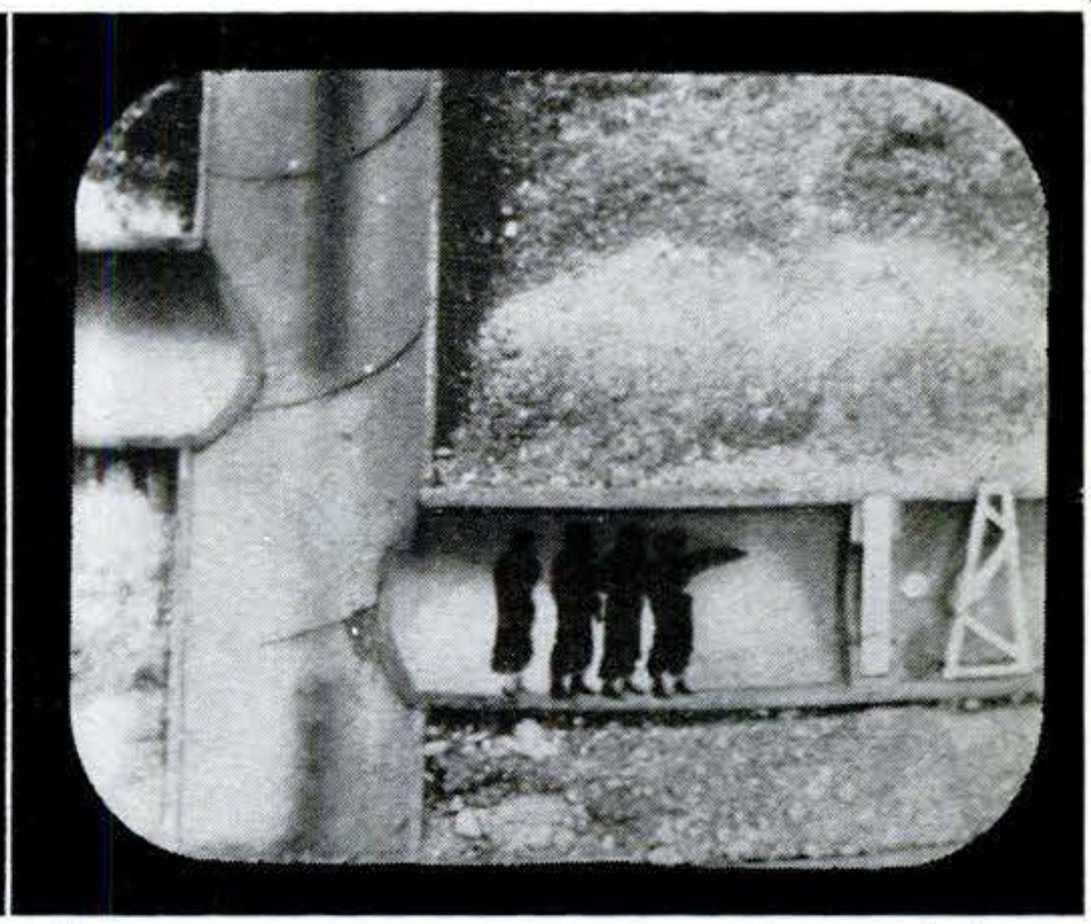
How Things Fall Up

A struggle in "space" becomes simple if the actors thrash about on a black-draped set while the camerman turns the prism slowly. And if something has to fall "up," it's a cinch just to let it drop in the studio and turn the prism to show it calling Newton a liar.

To get action against a moonscape or other scene usually requires two cameras. The images then are blended into one. Blending camera images is an old dodge, just the thing for creating ghosts such as



3 CAMERA IS SPOTTED to pick up image of actors small enough to fit into the tunnel, like this. Picture is electronically impressed on that from the first camera . . .



4 . . . TO BLANK OUT its own size and shape in the tunnel. "Hole" moves as the actors do. Turning a control fills blanked-out area with detail as in middle of the facing page.

Copyrighted material

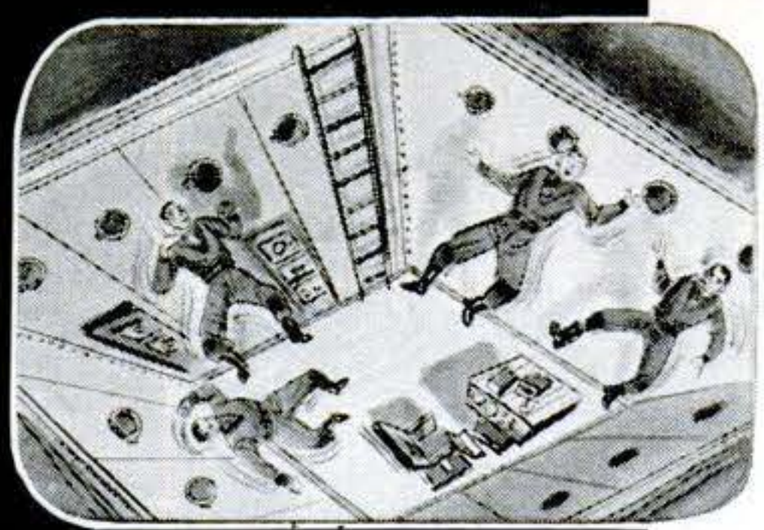
Man Falls Up

CREWMAN MAKING REPAIRS on space ship loses his hold and drifts up into space. Actually, prop hull is hung from ceiling, and man drops to floor as a prism turns scene upside down.

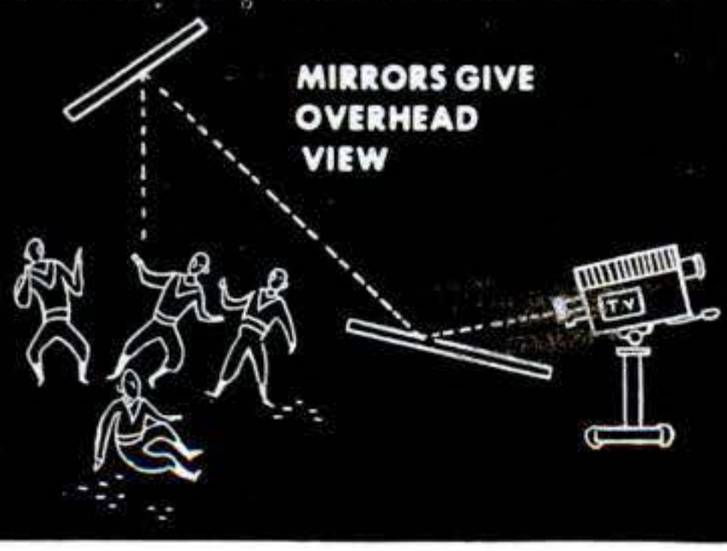
Flying Above Trees

ANTIGRAVITY FLIGHT was shown by rolling black-draped dolly, with actor face up on it, under trees hung upside down from ceiling. A prism turned the picture over.

A World Spins



INSIDE AN ASTEROID, men are pinned to walls as it spins out of control. They simulate action while a motor-driven prism on camera spins the picture. The three stunts above were on CBS's *Out There*.



Scrooge in *A Christmas Carol*. You expect to see the furniture through him. But it would spoil the illusion of the flying cadet if the moonscape showed through him.

It doesn't, thanks to an electronic rig in the control room. Technically a discriminator amplifier, it is called the Gizmo by the studio staff that puts on *Tom Corbett, Space Cadet*. Their version was developed by George Gould, director, and David Fee and Rolf Drucker, ABC engineers.

Gizmo Makes Men Fly

The Gizmo can pick up the picture of an actor on a black-draped set from one camera, and insert it in a picture of a moonscape set with other actors, picked up by a second camera. The first actor jumps, the camera dips (making him go up), and the prism is turned to spin his image around while he flails his arms about. In the blended picture, he seems to take off before the astonished eyes of his friends.

When the script called for a jungle setting, one camera focused close up on a jungle photo that showed a clearing in the foreground. The actors worked on a black-draped set, and the Gizmo blended the images. Wherever the actors walked, the "jungle" behind was blocked out solidly.

Moving the camera in or out can create the illusion of size from small props. In a chase across boiling mud flats of a primeval world, the actors leaped on prop rocks on a black floor. A close-up of a panful of boiling breakfast cereal, blended in by the Gizmo, furnished the terrifying natural setting—with plenty of steam and action.

Tyrannosaurs Live on TV

Look over Tom Corbett's shoulder as he takes his spaceship in for a lunar landing. The moon grows larger and larger in the view port over the control panel, craters and fissures stand out clearly as the ship comes in, tilt as it banks on turns.

This could be a moving-picture film of the lunar landscape on a screen behind the port. But filming takes time and money. With the Gizmo, one camera can pan in on a model lunar landscape. The other, behind Tom Corbett, takes in the view port but sees only a black drape through it. The Gizmo blends the two. You see the moon through the open portions of the port.

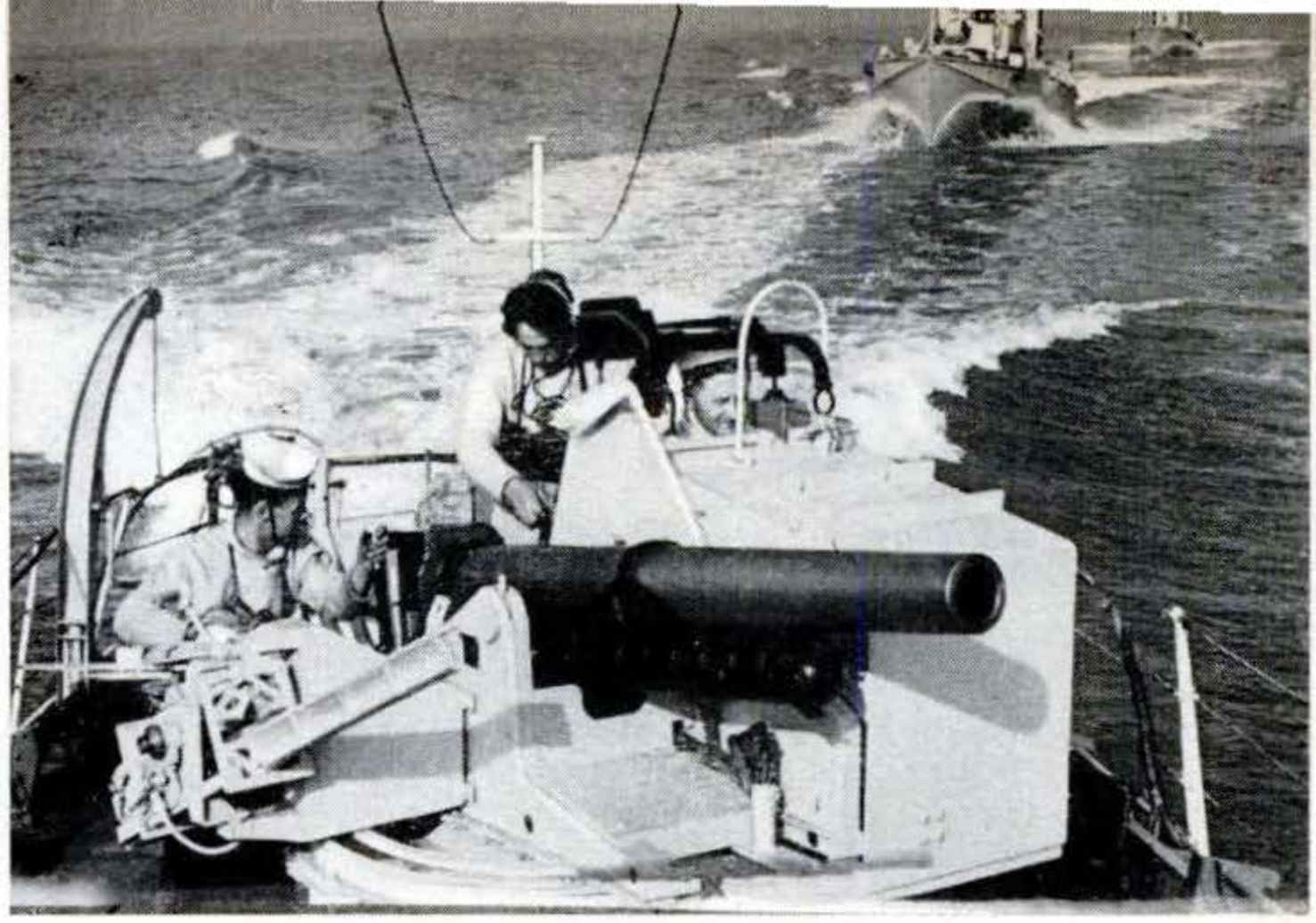
Tyrannosaurus Rex, in the terrifying scene of the attack on the ship, was noth-

[*Continued on page 258*]

Copyrighted material

Little Warship Carries Big Gun

BRITAIN'S motor torpedo boats now pack a bigger wallop. They carry 4.5-inch guns (shown in the stern of boat in right foreground). Famous for their attacks on enemy shipping and harbor installations during World War II, the little boats took part in Allied naval exercises held in Baltic and Scandinavian waters this year.



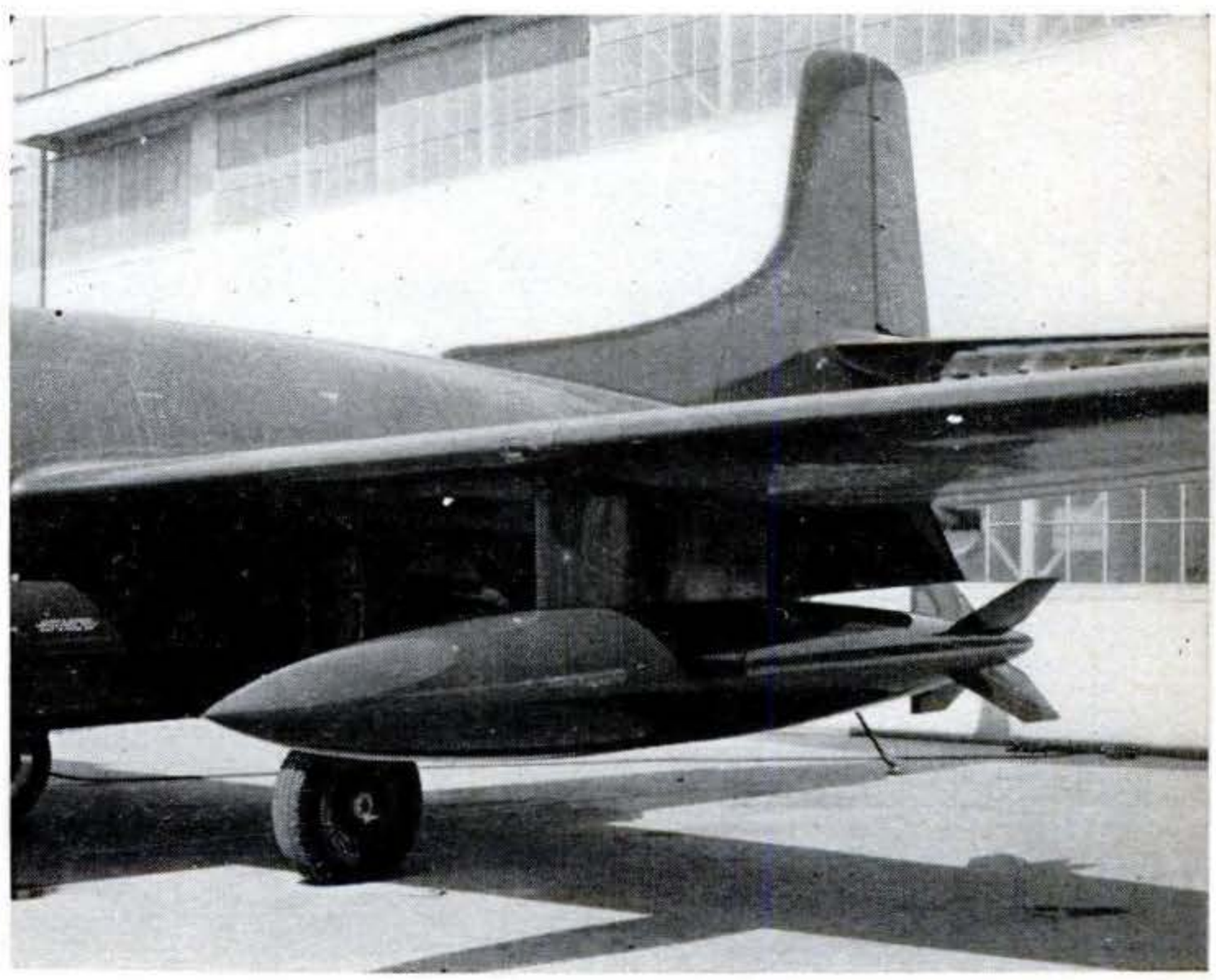
Game Has Backboard That Returns Ball for Next Wallop

CROSS table tennis with handball and you come up with Bat-Bak, the fast new game shown at left. It can be set up indoors or outdoors, played alone or in competition. It's easy to play but also furnishes scope for a player's constant improvement.

There's a board to fit a bridge table, one that rests on a dining table, and one that stands on its own folding legs. There is also a double set of boards that fit back to back on a tennis table. Bat-Bak, 257 Fourth Ave., NYC, makes the game.

Streamlined Bomb Ups Plane Speed

PLANES carrying this new cigar-shaped bomb can fly faster with a greater bomb load than planes lugging the World War II exploders. A bomber loaded with three of these "eggs" can travel 50 m.p.h. faster than a similar aircraft carrying only two old-style bombs of the same size. The X-shaped tail provides stability. Developed by Douglas engineers, the new bombs—called the Aero X-1A—are now being used by the Marines.



Copyrighted material

Car Carries Its Own Folding Garage

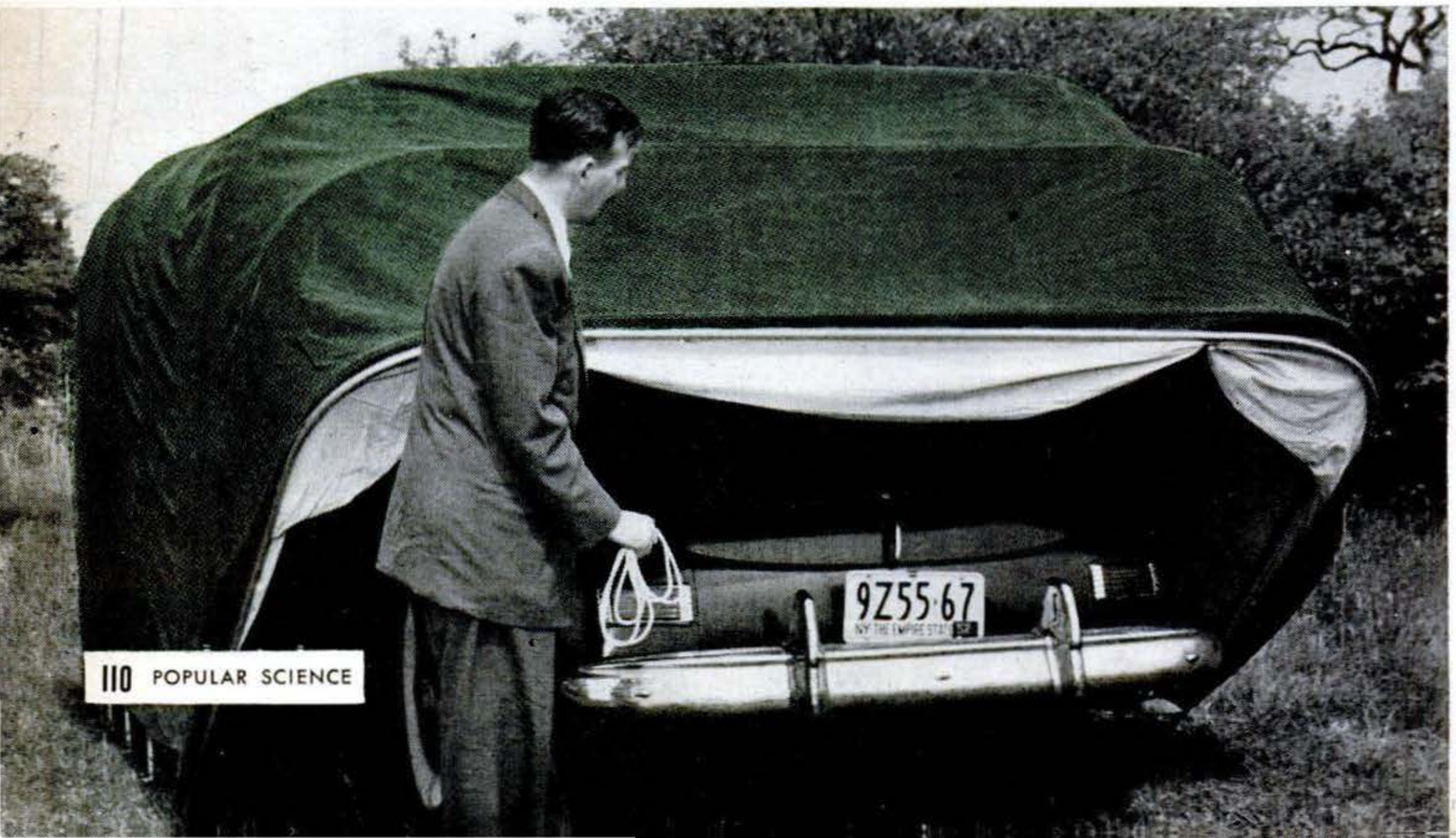
1 CARRIED PIGGYBACK on car and held securely by two light cords, this collapsible shelter serves as a traveling garage, boathouse, beach cabana, hunting or fishing lodge.

2 UP SHE GOES. After laying out parts, inventor Charles Margoles of New York City lifts one end, first step in setting up shelter. More than six feet high, 20 long and eight wide, it is big enough for any car or a small boat.

3 TO BRACE SHELTER, stretchers notched at ends are slipped into place. Wall ribs are bolted to base—strips of angle iron laid parallel on ground—at four places on each side to keep structure rigid in wind.

4 A PULLEY SYSTEM allows the front to be raised or lowered from outside, also serves to hold up the front when the shelter is used as a cabana or on camping trips. Unit has waterproof canvas walls and ¾-inch steel-tubing ribs.

5 ONLY FIVE MINUTES HAVE ELAPSED since shelter was removed from car. Now the car is cozily nested inside. Margoles calls his versatile invention a Porto-Shelter. It will be available in various solid colors as well as a two-color striped design. Price: about $100.



righted material

Prospectors Now Seek Lithium, the H-Bomb Metal

Fireworks occur as lithium burns with a dazzling light, scattering fiery bouncing fragments.

A strange element that floats on water and cuts with a knife is starting a mining boom to equal any gold rush in history.

By Alden P. Armagnac

TODAY a little-known metal, and one of the most curious, lures prospectors. You can cut this soft, silvery substance with a knife. Lightest in weight of all the metals, it is about half as heavy as water, in which it floats. But it will exhibit this remarkable property only briefly—for it fizzes and, in a twinkling, disappears!

Lithium is its name. Comparatively few people have ever seen it. But some foresee that the next few years may bring a world-wide scramble for its ores—a "lithium rush" matching any gold rush of the past.

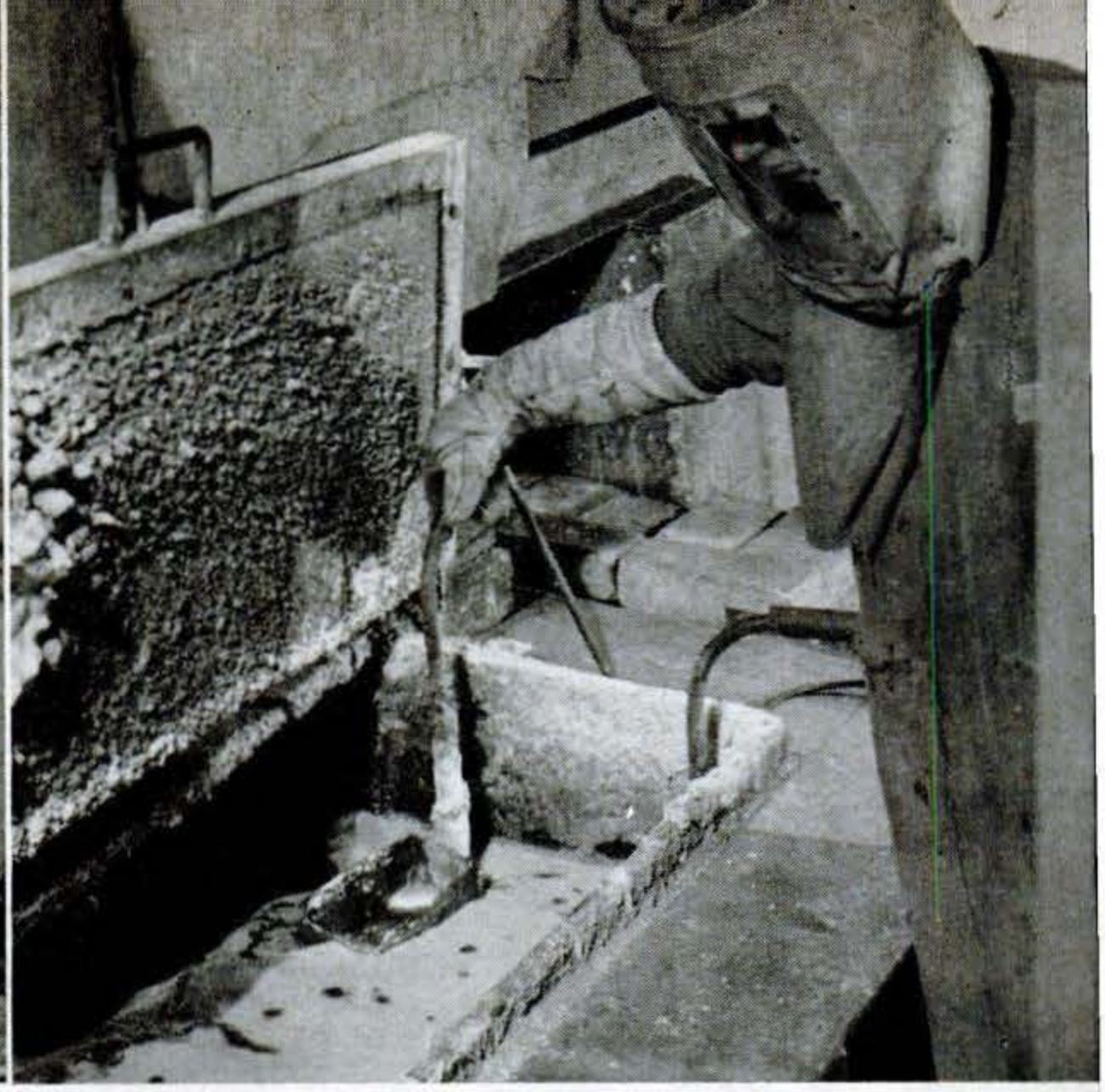
For lithium, there seems good reason to believe, may be called "the H-bomb metal." It is expected to play a key part in making the hydrogen bomb, the most awesome military weapon ever projected.

Top-secret as the H-bomb project is, it is no secret that if you bombard lithium with neutrons in a uranium pile, you will get "tritium," rare triple-weight hydrogen. This extra-heavy variety of hydrogen is believed —unofficially, at least—to be the kind most likely to be used in the hydrogen bomb. And the nuclear reactors of the billion-dollar Savannah River H-bomb plant, now rising in South Carolina, will be capable of making tritium from lithium on a mass-production scale.

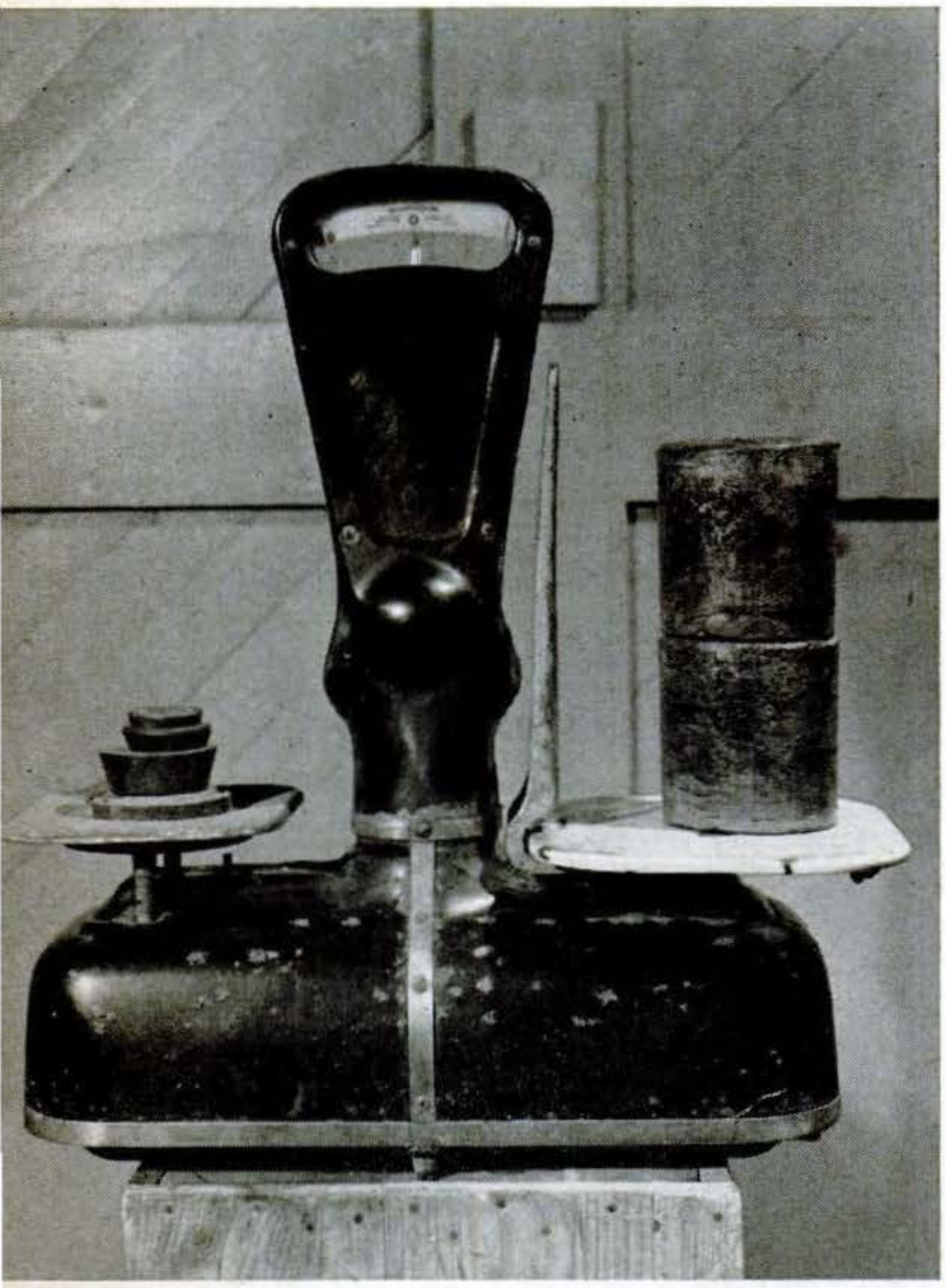
In addition, although this is pure speculation, lithium itself might actually be put

Copyrighted material

MINING LITHIUM usually is "open-pit" or quarrying operation. Principal U. S. ore, spodumene, is supplemented by imports of another, lepidolite, mined in Africa (above).



ELECTROLYTIC CELL yields 90 pounds of lithium metal daily. Molten metal, floating on top of fused lithium-chloride bath, is ladled off and poured into molds to make ingots.



SIZABLE INGOTS of lithium metal on scales (right) are balanced by small weights shown. Lithium is lightest of all metals; ingots weigh only one pound 13 ounces apiece.

into H-bombs. Fusion-type atomic reactions between hydrogen and lithium are among those that could yield enormous energy, physicists have pointed out. Further, the purely mechanical problem of squeezing as much hydrogen as possible into a bomb might favor using lithium hydride—a solid lithium-hydrogen compound—in preference to pure hydrogen gas, which would need to be highly compressed or liquefied. And so, whether in one of these ways or more, lithium seems as indispensable a raw material for H-bombs as uranium is for A-bombs.

All-Purpose Grease

Besides the H-bomb, there are other reasons for a suddenly awakened national interest in lithium. And one of these may have comparable importance from a military standpoint.

Planes, cars, trucks, gun carriages and tanks must be prepared to operate in conditions ranging from tropical heat to arctic and substratosphere cold. Hitherto they have required a special lubricant for each type of service. Now comes the discovery of a "wonder" grease that retains its lubricating qualities at extremes of temperature from 320° above to 60° below zero. The new ingredient that gives it this ability is a soaplike compound of lithium called lithium stearate. It seems likely that the all-purpose lithium-base grease can replace many other

Copyrighted material

LITHIUM METAL in form of wire and ribbon serves as catalyst in such chemical processes as making synthetic vitamins. Coating of petroleum jelly or heavy oil, protecting shiny reactive surface from air, is easily removed just before use. Also available are "cartridges" of lithium metal for use in making copper of high conductivity.

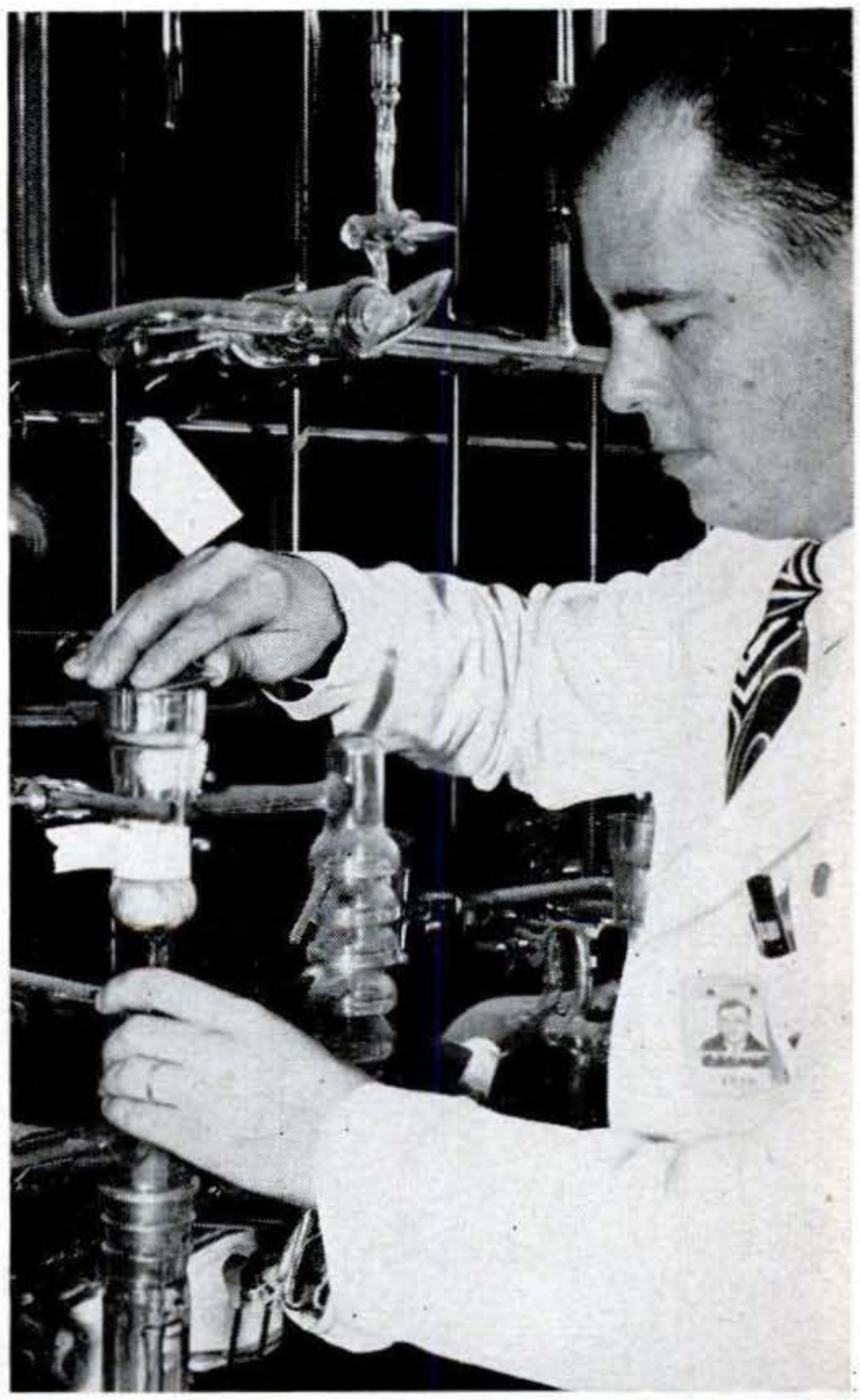
kinds, a simplification of utmost significance to the armed forces. "It has been estimated," says a recent editorial article in *Industrial and Engineering Chemistry*, "that lubricant demands of the military alone, if fully satisfied, would consume the entire present production of lithium in the U.S."

Fortunately this country ranks among the most favored of nations in known lithium resources. Working these on a modest scale, in the past, has yielded enough of the metal and its compounds to meet commercial needs. Now production is shifting into high gear.

A big flotation mill, newly erected by the Lithium Corp. of America at Hill City, S. D., boosts by 50 percent that company's former output of lithium metal and chemicals. Power shovels scoop the raw material, a white rock called spodumene, from nearby open-pit mines. Vertical mine shafts, extending 200 feet deep or more, supplement this quarrying operation.

New Source Tapped

A vast deposit of the same ore has been found at Kings Mountain, N. C.—once the scene of a gold rush and also the site of an unprofitable and abandoned tin mine. By buying this "mountain of lithium" and mining it in open-pit fashion, the Foote Mineral Co. is supplying the raw material for a new $215,000 extraction plant that doubles its



TRITIUM, the kind of hydrogen that may be used in H-bombs, is purified with apparatus above, after being made from lithium in atomic pile at Argonne National Laboratory.

Copyrighted material

previous production of lithium chemicals.

Spodumene ore is a lithium-aluminum silicate. In one way to extract the lithium, by acid and heat treatment, you first get lithium carbonate; further chemical steps convert it to other desired salts, including lithium chloride. Then, fusing lithium chloride and passing 8,600 amperes of electric current through it in an electrolytic cell yields pure metallic lithium.

Comes as Wire, Ribbon or Cartridge

If you go shopping for lithium metal, you will find that you can buy it as wire wound on wooden spools and as ribbon coiled on reels. These are the forms in which it is sold for its principal use to date—as a catalyst, or chemical-reaction promoter, in such processes as manufacturing synthetic vitamins.

You can also buy lithium "cartridges"—short lengths sliced from a rod of the metal and hermetically sealed in copper tubing. They permit adding a tiny, carefully measured fraction of a percent of lithium to molten copper, in a foundry, producing sound copper castings of high electrical conductivity. Lithium metal in larger proportions improves the strength of aluminum and magnesium alloys and hardens lead-base alloys used in railway bearings.

Lithium is a bona fide chemical element—No. 3 in the chemist's list of them, preceded only by hydrogen and helium. And it is an extremely active one. Dip lithium wire or ribbon in water, and it vanishes in a vigorous reaction, forming copious bubbles of hydrogen gas and leaving behind a solution of lithium hydroxide. This resembles the reaction of metallic potassium with water, a more familiar chemistry-classroom spectacle, except that in this case the gas does not take fire.

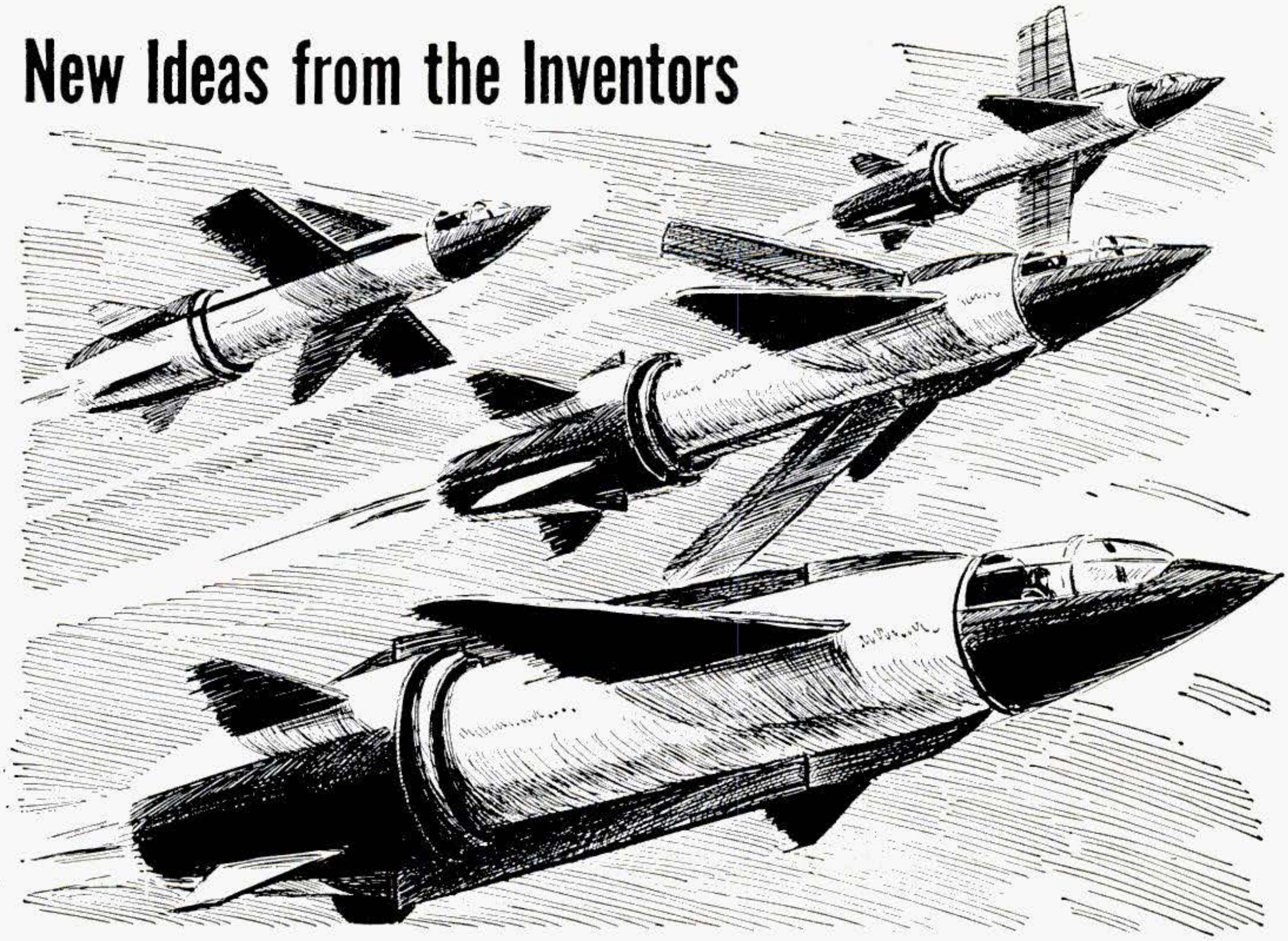
Simply ignite a piece of lithium wire or ribbon, however, and you will get plenty of fireworks. Like magnesium, lithium metal will burn, with dazzling white light and intense heat.

In an atomic furnace, lithium captures neutrons and immediately turns into a mixture of two gases—tritium and ordinary helium. These are readily separated, since tritium will combine with oxygen, forming "extra-heavy" water and leaving the helium behind. Then the purified tritium may easily

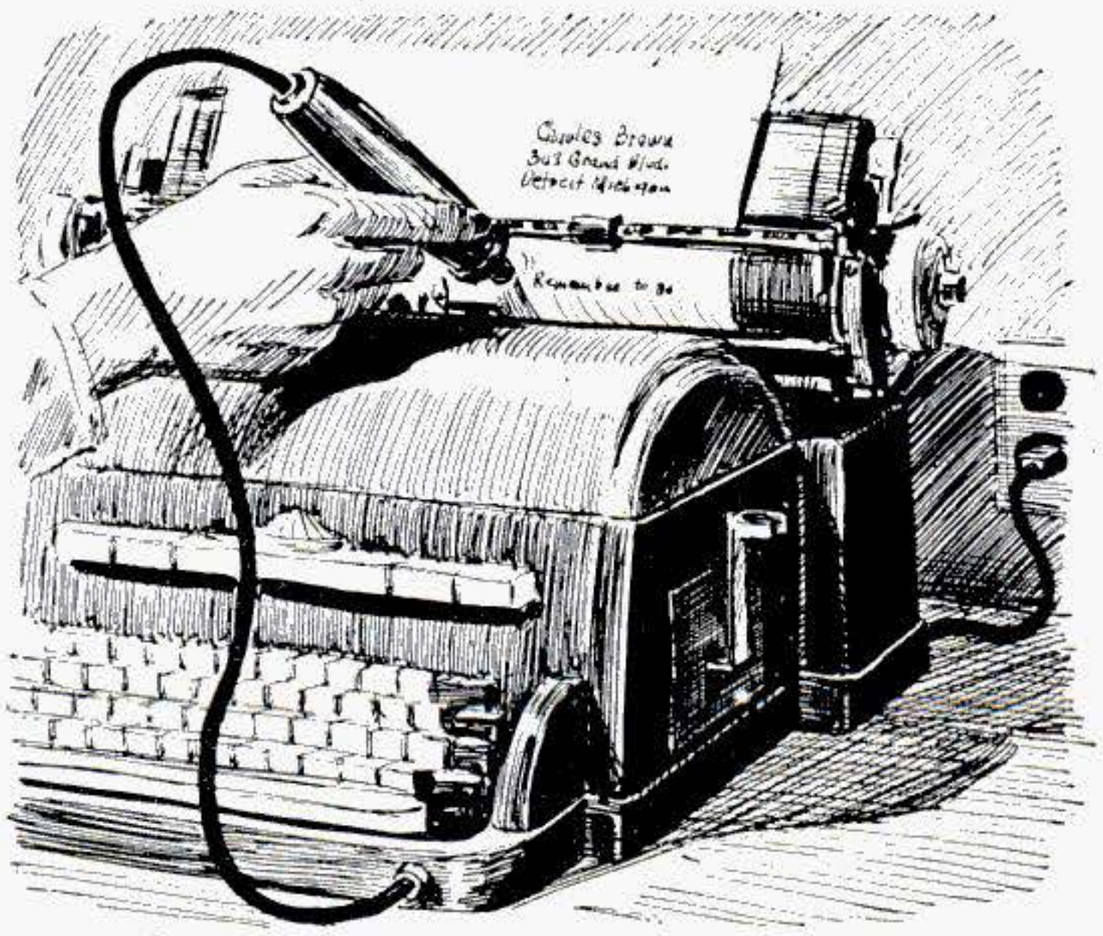
[Continued on page 250]

Copyrighted material

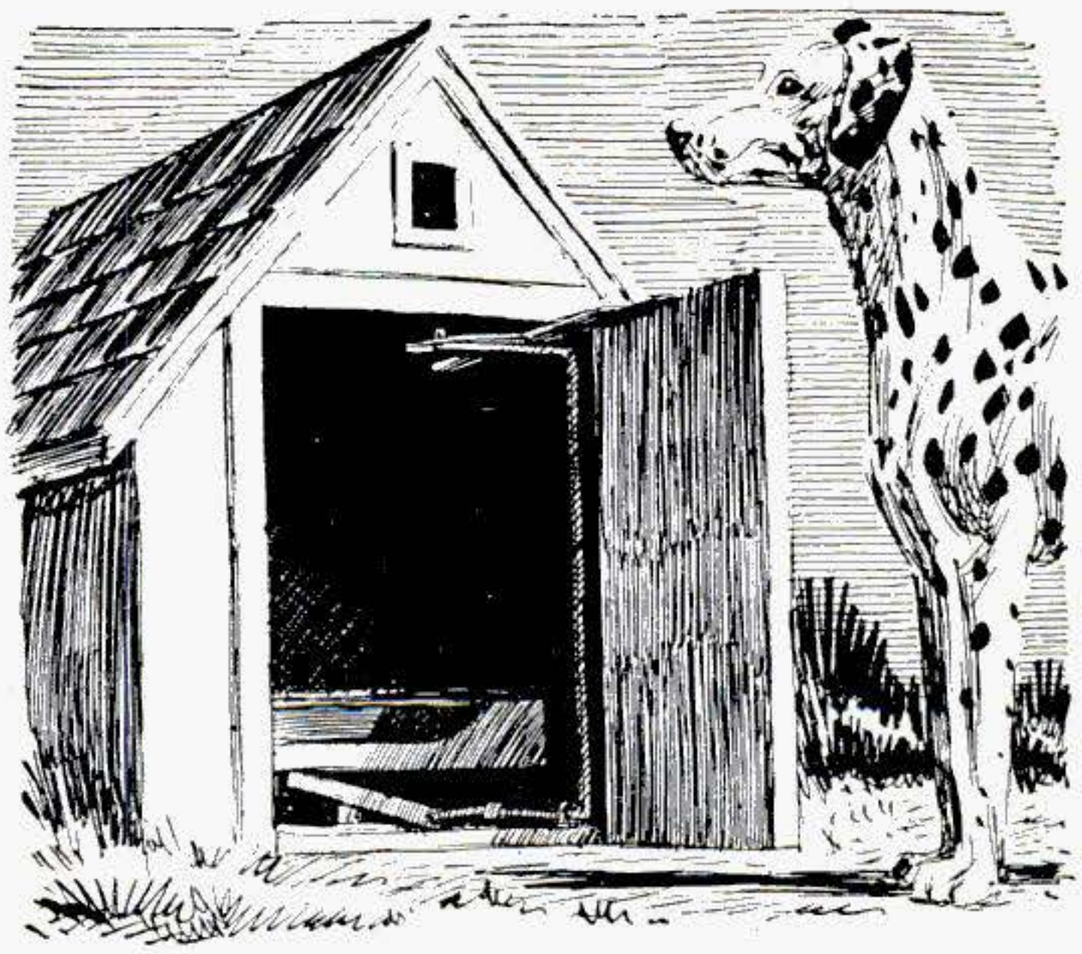
New Ideas from the Inventors



1 Plane to Change Wings in Air. At low speed the plane above would use large wings for greater lift; at supersonic speed, it would switch to stubby ones perpendicular to the others to cut drag. To change over, the center fuselage section would revolve 90°, then the large wings would retract into the fuselage. For take-offs and landings with the large wings, the shorter wings would retract in the same way.



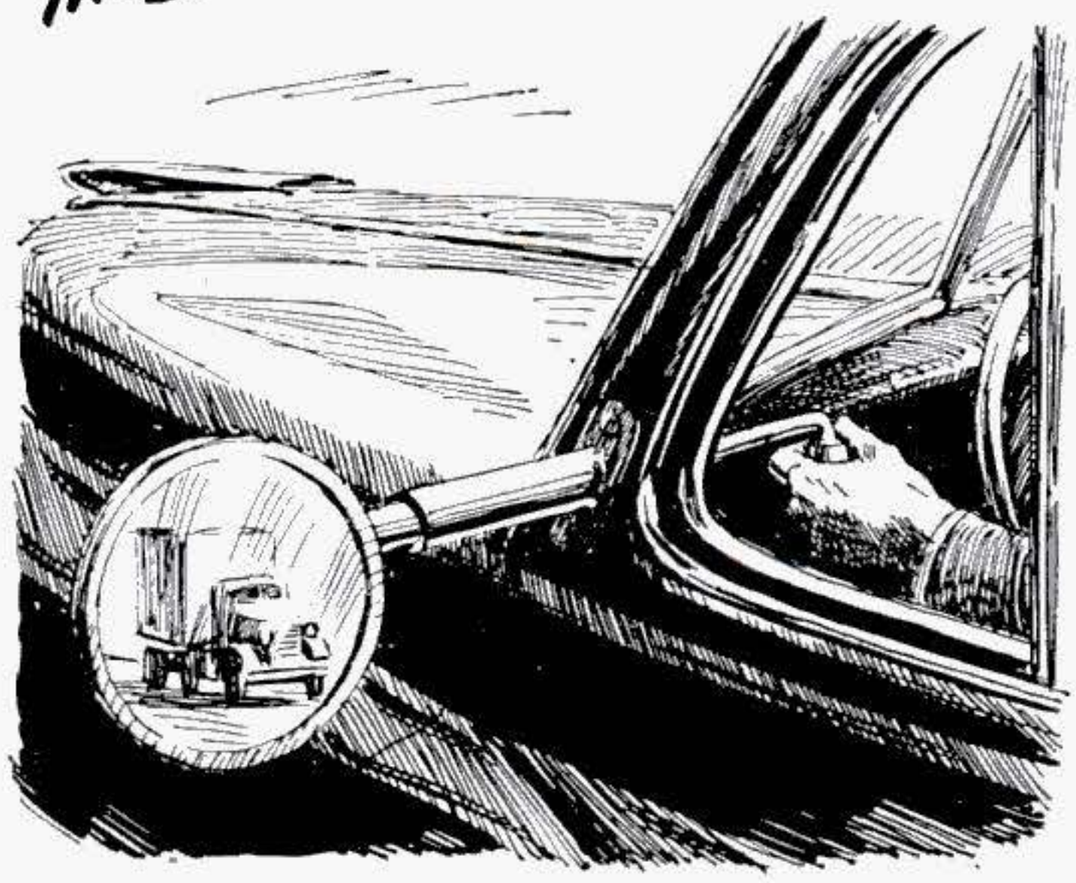
2 Typewriter to Power Eraser. You can make mistakes faster with an electric typewriter—and you could correct them faster, too, with this electric eraser attached to it. Remove the eraser from its spring-clip holder, and the typewriter's own motor would spin a replaceable rubber erasing tip through a flexible cable.



3 Dog to Close Kennel Door. When Rover got into his bunk in this doghouse his weight would actuate a lever linkage to close the spring door against the weather. When he stepped out, the door would open. Should he refuse to emerge at his master's call, he could be reached through an easily removable section of the roof.

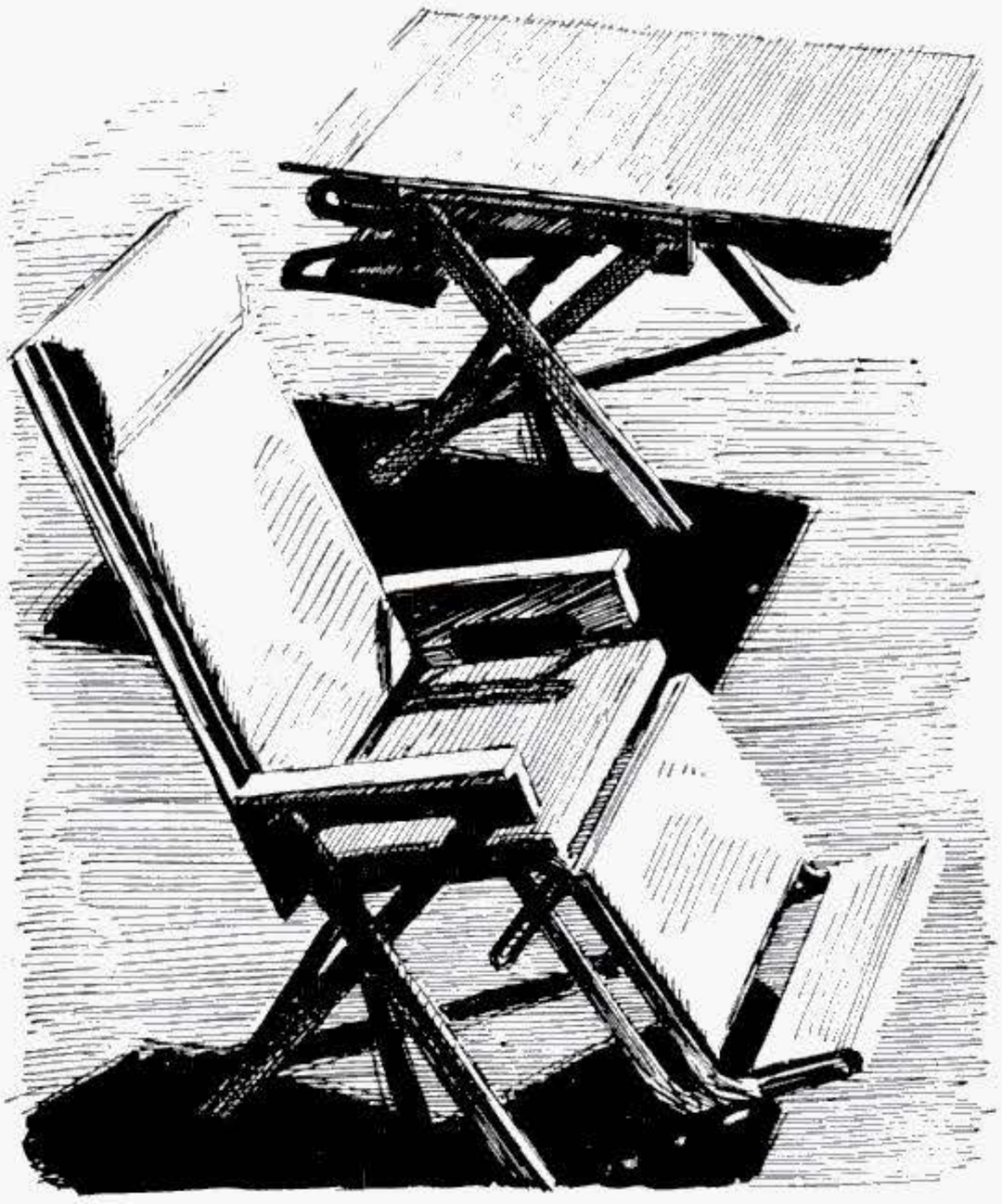
Please turn the page for more new ideas.

MORE New Ideas from the Inventors



4 Handle to Adjust Car Mirror. If two or more people drive your car, this inside-controlled mirror could settle old arguments. Each driver could set the mirror to suit himself. The handle would also allow you to extend, angle or tilt the mirror to see around curves and obstructions or to deflect headlight glare.

5 Pipe to Light Itself. A pipe smoker could leave his matches at home if he had a lighter like this built into the stem of his briar. Folded, the lighter would look like part of the stem. In use it would lift up to hold a flame directly over the tobacco bowl. The user could raise and strike the lighter with one hand.

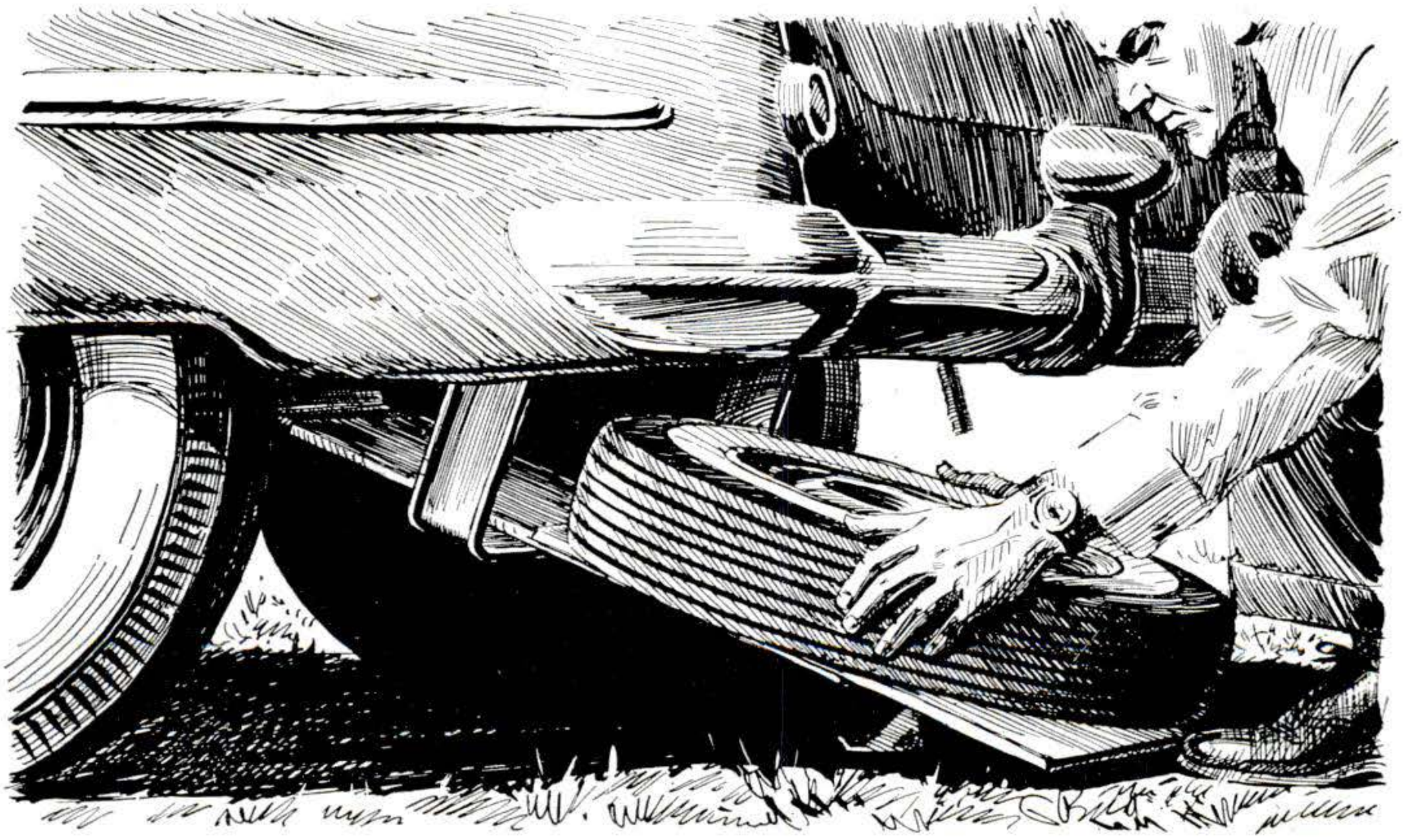


8 Chair to Change into Table. One piece of furniture made like this would give a lot of mileage. It could be folded flat for storage or unfolded into a table, an upright or reclining chair, or a couch. The arms and footrest would swing themselves into position when the back was moved.

9 Refrigerator to Fit Corner. Designed to make better use of kitchen space, this refrigerator would fit snugly in a corner. Two straight sides and a curved front would enclose circular, rotating shelves. Shelf sections would hook onto a center post, could be unhooked for removal and cleaning.

6 Trouser Cuffs to Clip On. You could alter the lengths of trousers yourself if the manufacturer provided clip-on cuffs of the same fabric. They could be unclipped to simplify pressing. Frayed cuffs could be replaced quickly and inexpensively and trousers could be lengthened to keep pace with growing youngsters.

7 Wrench to Loosen Jar Caps. You would never have to wrestle with frozen jar caps if you had this wrench to coax them open. Jaws joined by a threaded shaft could be tightened by a twist of the handle, and turning the handle would provide enough leverage to free any cap. The wrench could also be used to seal jars tightly.



10 Carrier to Slide Spare Out. The spare tire would always be easy to get at if it were carried under the rear overhang of a car on a let-down sliding shelf like this one. You wouldn't have to disturb luggage in the trunk, and the tire could be rolled rather than lifted in or out. Raised, the carrier would be hidden by the bumper.

Patents on these inventions have been granted to: 1. R. Robert, Boulogne-sur-Seine, France; 2. M. Alden, Tulsa, Okla.; 3. G. Blatchford, Los Angeles; 4. R. Goldstein, Pittsburgh; 5. G. O'Neill Jr., Yonkers, N. Y.; 6. H. Lewallen, Anderson, Ind.; 7. J. Fay, Villa Park, Ill.; 8. D. Rizzolo, Bloomfield, N. J.; 9. R. Paul, Millard, Neb.; 10. J. Selzer, Ft. Wayne, Ind.

Copyrighted material

Bright Ideas

Put Teen-Agers in Business

High-school students who become manufacturers one night a week make fast-selling items out of stuff often headed for the junk heap.

By Stephen R. Philips

BUSINESSMEN not yet out of high school have proved that you can sell a lot of discarded bottles, empty beer cans and outmoded telephones—if you're only as ingenious as they are.

Ingenuity pays dividends, they have learned from a national organization called Junior Achievement, Inc. Now celebrating its tenth birthday, JA has taught the facts of business life to 73,000 high-school juniors and seniors—and more young people will become Junior Achievers this fall, almost as soon as school reopens.

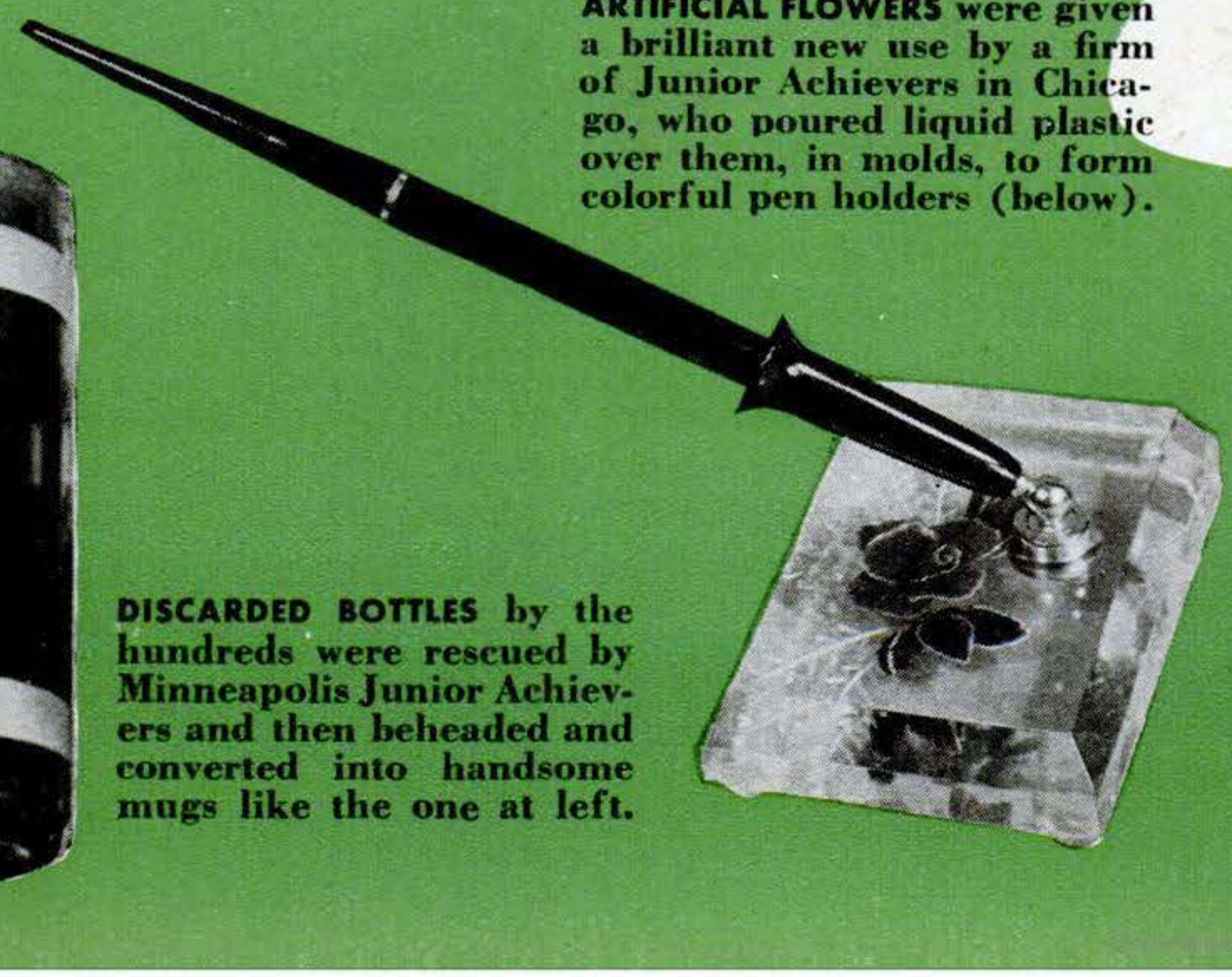
In 63 communities in 22 states last year, more than 14,000 of these young men—and women, too—organized 1,266 companies that turned out an astonishing range of products, from bubble-bath crystals to lamps that are made out of glass bricks.

The average company had 12 employees, who worked one night a week at wages of 10 to 20 cents an hour. One or more adult advisers, supplied by a sponsoring local or national firm, helped them smooth out production problems. Many a well known firm was among the hundreds of sponsors: U. S. Steel, General Electric, Esso Standard Oil, General Motors, Allis-Chalmers, International Harvester.

Working capital came from 101,000 interested citizens of the communities in which the JA firms were located. They bought shares in the various enterprises at 50 cents a share and sometimes made as much as five percent on their investments. The investors got their principal back at the end of the school year.

The youngest junior executives, salesmen,

ARTIFICIAL FLOWERS were given a brilliant new use by a firm of Junior Achievers in Chicago, who poured liquid plastic over them, in molds, to form colorful pen holders (below).



DISCARDED BOTTLES by the hundreds were rescued by Minneapolis Junior Achievers and then beheaded and converted into handsome mugs like the one at left.

A noisy argument over what to charge for lawn coasters enlivens a JA directors' meeting.

ONCE A BEER CAN, emptied and tossed aside, the attractive watering can below was the creation of a smart group of Junior Achievers in Dayton. They also made popular clothes sprinklers from the same raw material.

THIS HANDSOME LAMP is a JA triumph. Its copper base was once the top of a slightly flawedcoffeemaker.

OLD-FASHIONED TELEPHONES that were a drug on the market were bought at salvage prices by Toledo Junior Achievers, who removed the enamel finish and made lamp bases of them.

NO LONGER UNWANTED, as lamps the brass telephones sold like ice cream on a hot day.

bookkeepers and craftsmen were 15. The oldest were 20. When a Junior Achiever becomes 21, he has to resign.

It was a teen-age group in Minneapolis, calling themselves the Achievers Manufacturing Co., who made clever use of discarded bottles. After collecting them, at no cost, they first washed and sterilized the bottles, then broke off the necks. This last task was uncertain and dangerous until someone thought of doing it with a strand of electrically heated wire looped around the bottle. The bottle was rotated as the wire grew hotter, until the neck broke off clean. The young workmen then filed and smoothed the rough rims, fastened broad metal strips around the bottles near the tops and bottoms, and attached heavy wooden handles to the strips. The completed mugs were handsome, were priced at $2 for a set of four and sold at a breathless pace.

Sprinklers from Beer Cans

A Dayton firm of Junior Achievers did equally well with empty beer cans. They converted them into two popular products: watering cans and clothes sprinklers. For both uses the beer cans were painted and decorated with decals. Making clothes sprinklers of them was merely a matter of substituting perforated metal caps for the original tops. To make watering cans, the kids on the production line pierced each beer can near the bottom, cut a straight length of spout and made a gooseneck of it, sawed and burred a lip of the spout, cut and formed a tin handle and finally soldered spout and handle to the by-then unrecognizable beer can.

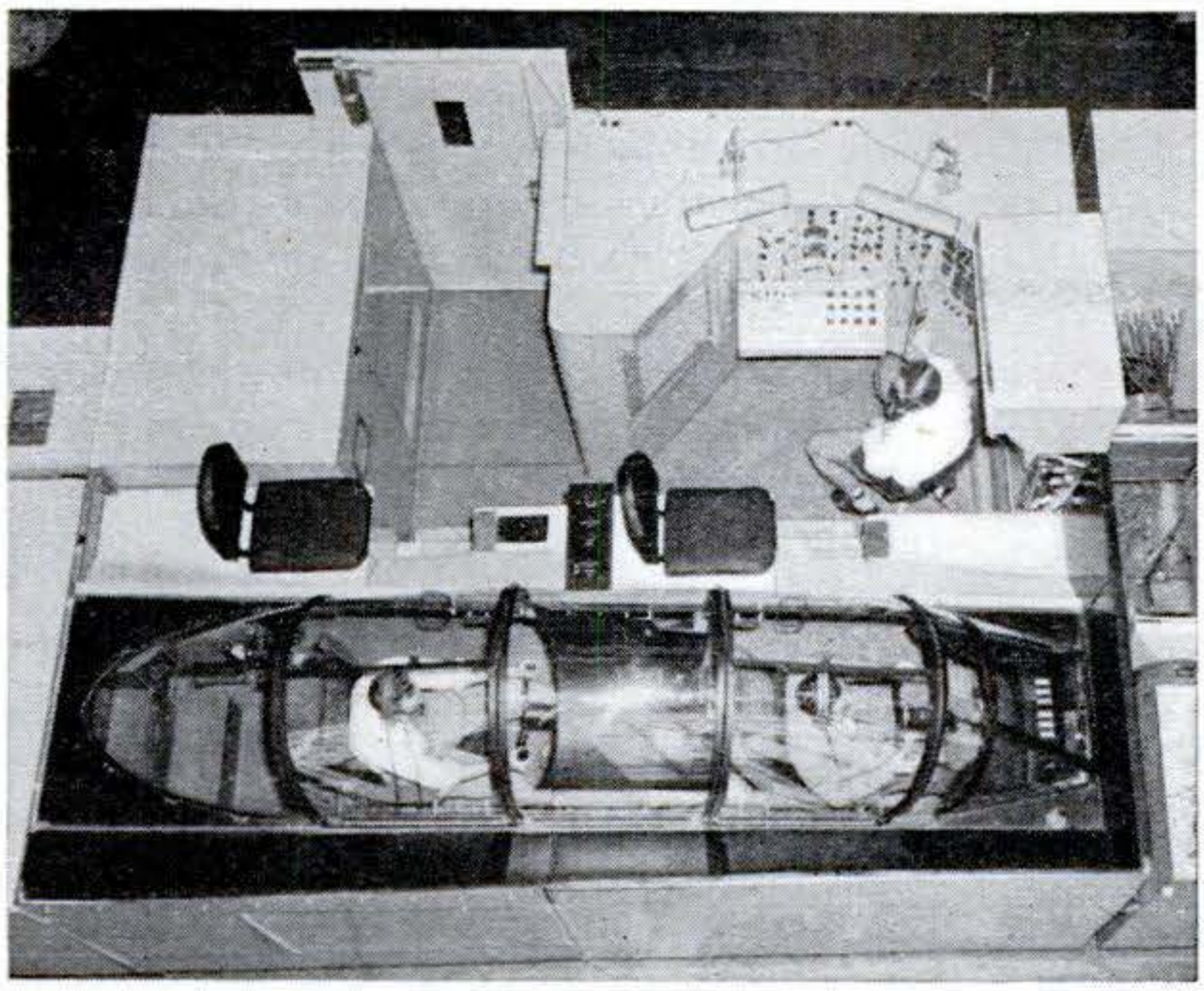
Junior Achievers work in leather, plastic, wood, metal, ceramics, textiles and even chemicals. They make ashtrays, costume jewelry, toys, salt shakers, book ends, shaving lotions, pen holders, spot removers, lawn coasters, automatic closet lights, radios. Groups that didn't happen to be clever with tools have made a commercial success of baby sitting, providing live models for advertising agencies, publishing small newspapers, preparing radio shows and even operating pint-size banks.

They Bought a Locomotive

A firm made up of several members of Houston's soda-fountain set carried out a highly rewarding salvage operation. For a very low price, they bought an old locomotive that a local firm was permitting to rust away. Then they swarmed all over it, dismantling it piece by piece, and sold the parts to scrap-metal dealers at fancy profits.

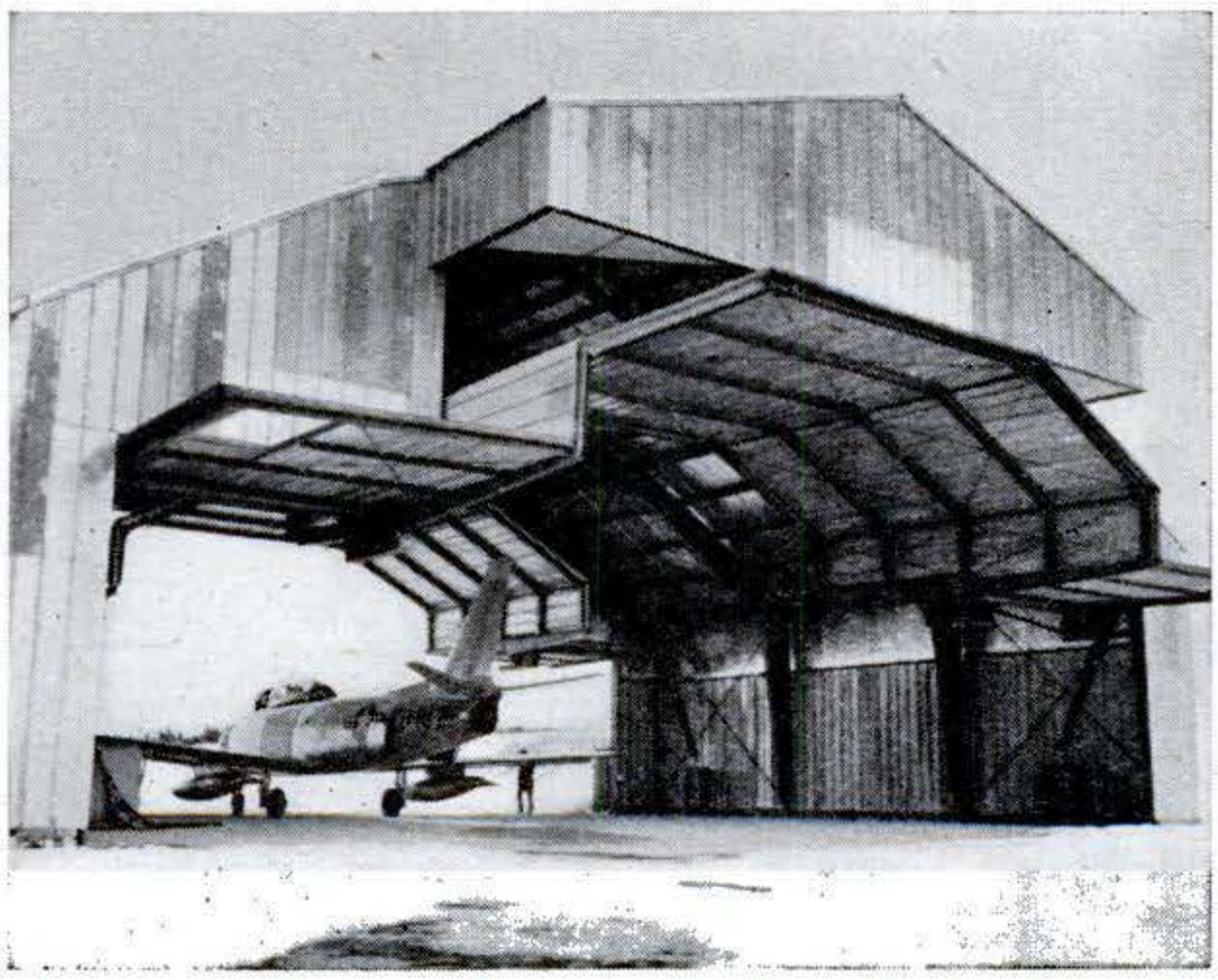
Many a teen-age firm has shown plenty of enterprise as well as ingenuity. One called Crafts Unlimited, in San Francisco, manufactured log centerpieces for table decorations. Not only did the young businessmen make and market their product—they shouldered axes, trekked into the woods and cut down their own trees. END

Copyrighted material



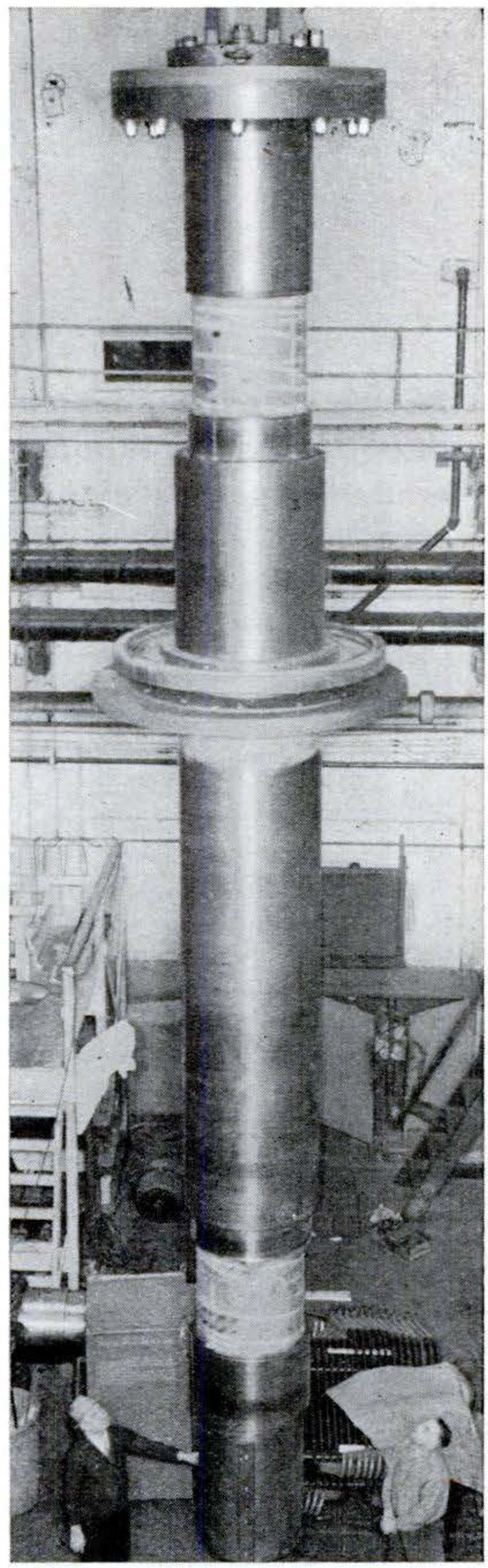
For Jet Pilots to Learn On

HERE'S a topside view of the newest Air Force flight trainer. It's the first jet simulator for training B-47B Stratojet pilots. The tandem cockpit in the foreground holds pilot and co-pilot. Beyond it are two observation seats for instructors. In the background is the control station. A canopy encloses pilots and observers when the electronic trainer is in use. Link Aviation, Binghamton, N. Y., designed and built the flight trainer.



Hangar Gets Planes Out and Up Fast

INTERCEPTORS at Burlington, Vt., can be in the air to challenge enemy bombers in less than three minutes. A hangar with push-button doors at front and rear cuts out plane jockeying on the ground. On the signal to "scramble," doors are opened, pilots start plane engines in the hangar and taxi right onto the runway. Returning planes enter via the rear doors which also act as a vent to carry off exhaust blast when jet engines are started up.



Big Shaft for New Motor

THIS huge steel shaft, 31 feet long and weighing 45 tons, will go to work as part of the world's most powerful electric motor—an 83,000-horsepower giant built by Westinghouse. The use to which the motor will be put is anybody's guess. No information on the subject is being disclosed.

Copyrighted material

British Build Plastic Wings

They will test them on a jet of delta design. Whole planes made the same way may follow.

IN A converted streetcar barn 30 miles south of London, a tiny team of British scientists in the government's Royal Aircraft Establishment are getting plastic ready to take over aluminum's job in airplanes.

The RAE men say their new plastic plane skin will cut the cost of a wing or fuselage in half. They claim it will shave two years off the four it now takes to bring a newly designed model from blueprints to production. They say it will double or treble the number of planes made each day.

Other advantages they see for their material: smoother surfaces for faster flights, and a 20-percent-lighter air frame, which will increase the usefulness of engines.

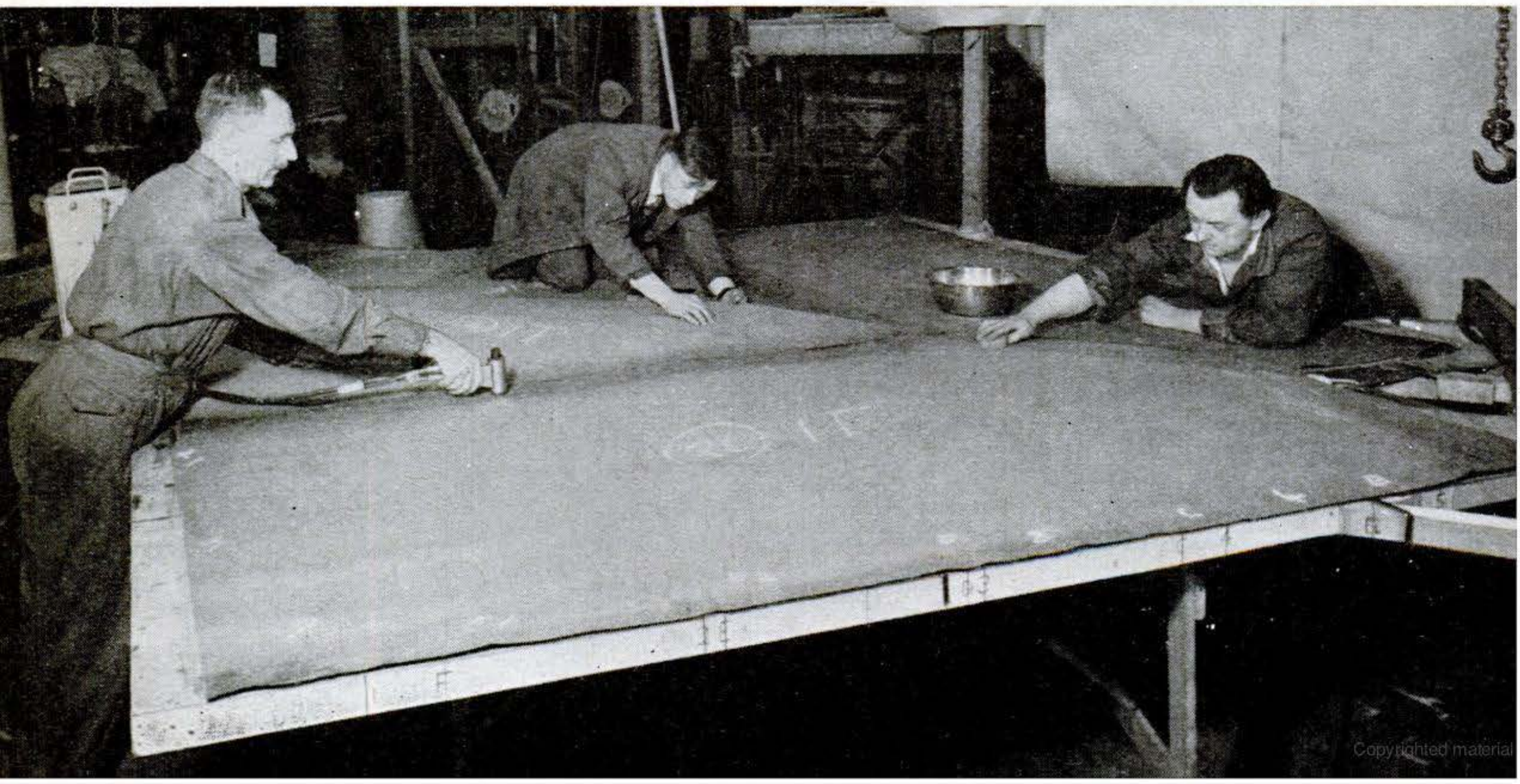
To prove that their plastic can take a beating in flight, the RAE men plan soon to attach two plastic wings to the fuselage of a secret new delta-wing jet fighter. The hybrid plane may fly this month. Since the wing is subjected to greater flight forces than any other structural part, proof that the plastic wing stands up will open the way to all-plastic air frames.

The material used is asbestos impregnated with phenol formaldehyde powder. Mixing the chemical with the mineral fiber produces feltlike sheets that can easily be cut and shaped and then baked hard without the need for expensive high-pressure molding machines. The accompanying photos show four stages in the process.

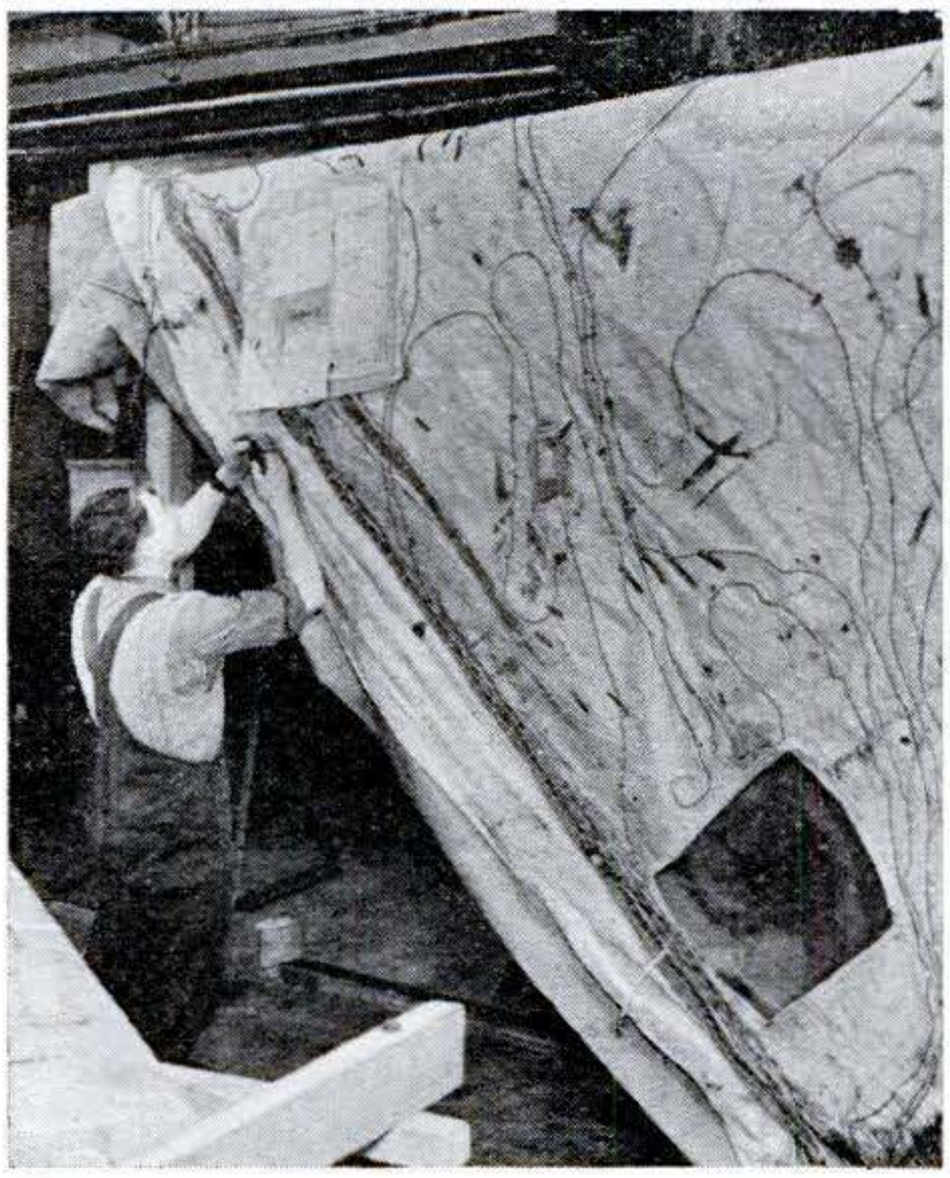
The wing is produced in two layers—an outer one and an inner one. The outer shell is baked to the inner one after the latter has already been fitted with ribs and other necessary innards. But each shell is first baked by itself, so that it can be worked on more easily.

Even if tests prove its superiority, however, plastic is not likely to begin pushing metal out of the sky in any big way at once. For one thing, the British scientists believe they can improve the material. By combing the asbestos fibers at a certain angle instead of letting them lie as haphazardly as nature has, they believe they can eliminate the material's one major flaw: the fact that it doesn't take twisting stresses quite as well as metal does. Swept-back wings are especially subject to these forces. That's why they chose a delta-wing plane for flight tests. —*Mitchell Gordon.*

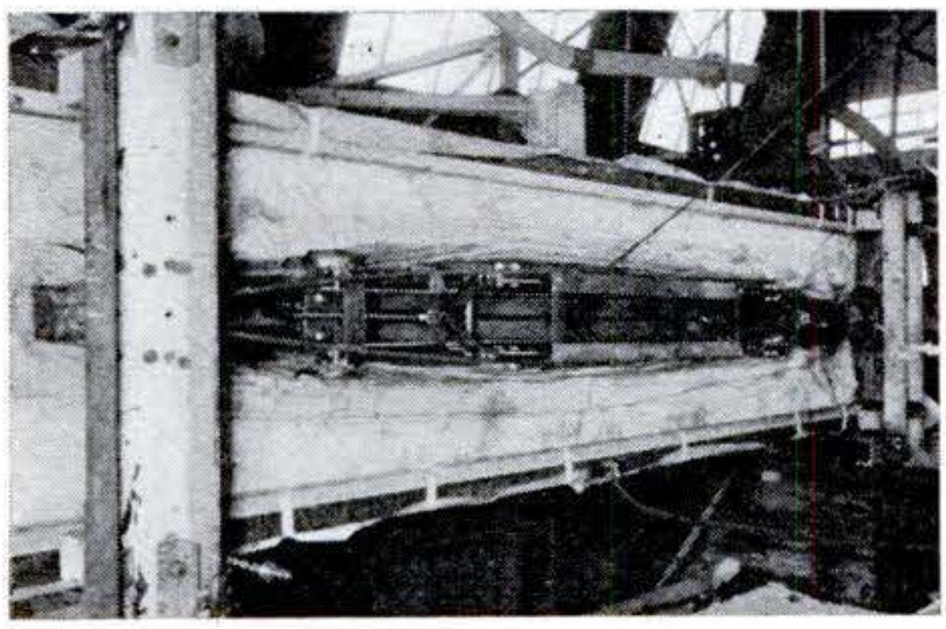
1 WELDING FELTLIKE PLASTIC SHEETS with a high-frequency electronic iron. When the plastic fabric is thick enough for baking, it is draped over a wing jig that is covered with an inflatable rubber bag, and it is then shoved into an overhead oven of similar shape.



Copyrighted material

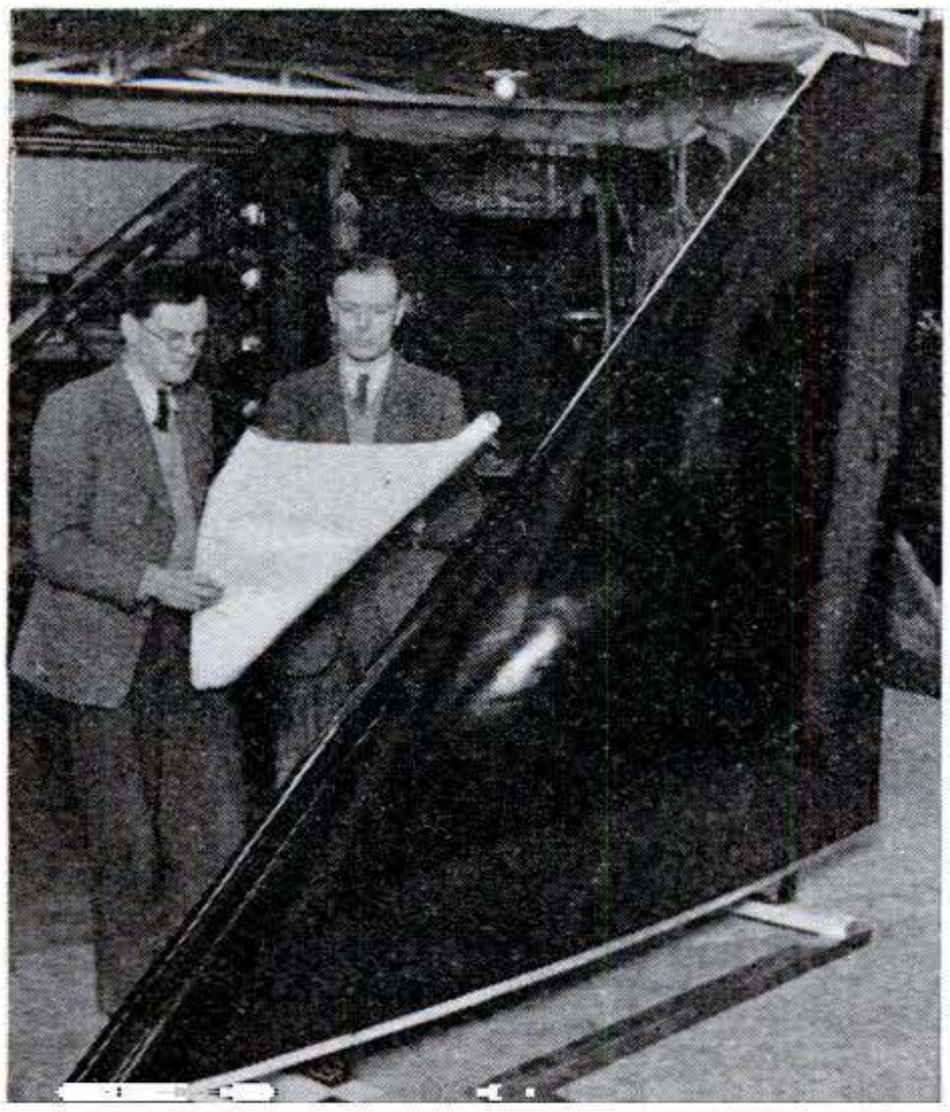


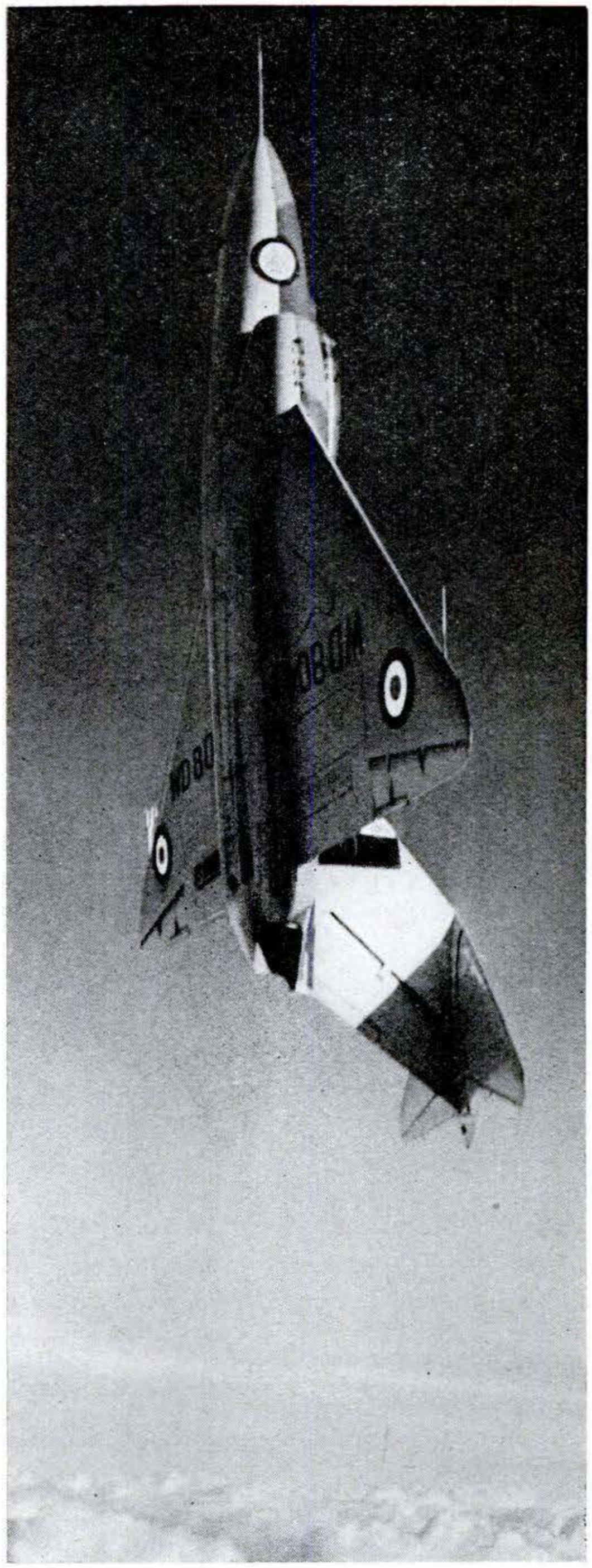
2 DRAPING A WING JIG with the inflatable rubber bag prior to covering it with the plastic sheet. The bag will press the plastic sheet against the oven lining.



3 OVERHEAD OVEN where wing is being baked. Vacuum exists between plastic and oven lining, so atmospheric pressure forces rubber bag against plastic.

4 FINISHED PLASTIC WING, though not one that will be flight-tested, is checked against blueprints by two of the British scientists who developed process.





Heading Straight "Upstairs"

A BRITISH night fighter of the delta-wing type that will test the plastic wings described on these pages is shown in a spectacular vertical climb. The plane, now in full production for the RAF, is a Gloster GA-5. It flies faster than sound, its two Sapphire jet engines developing a combined thrust of 16,600 pounds.

Copyrighted material

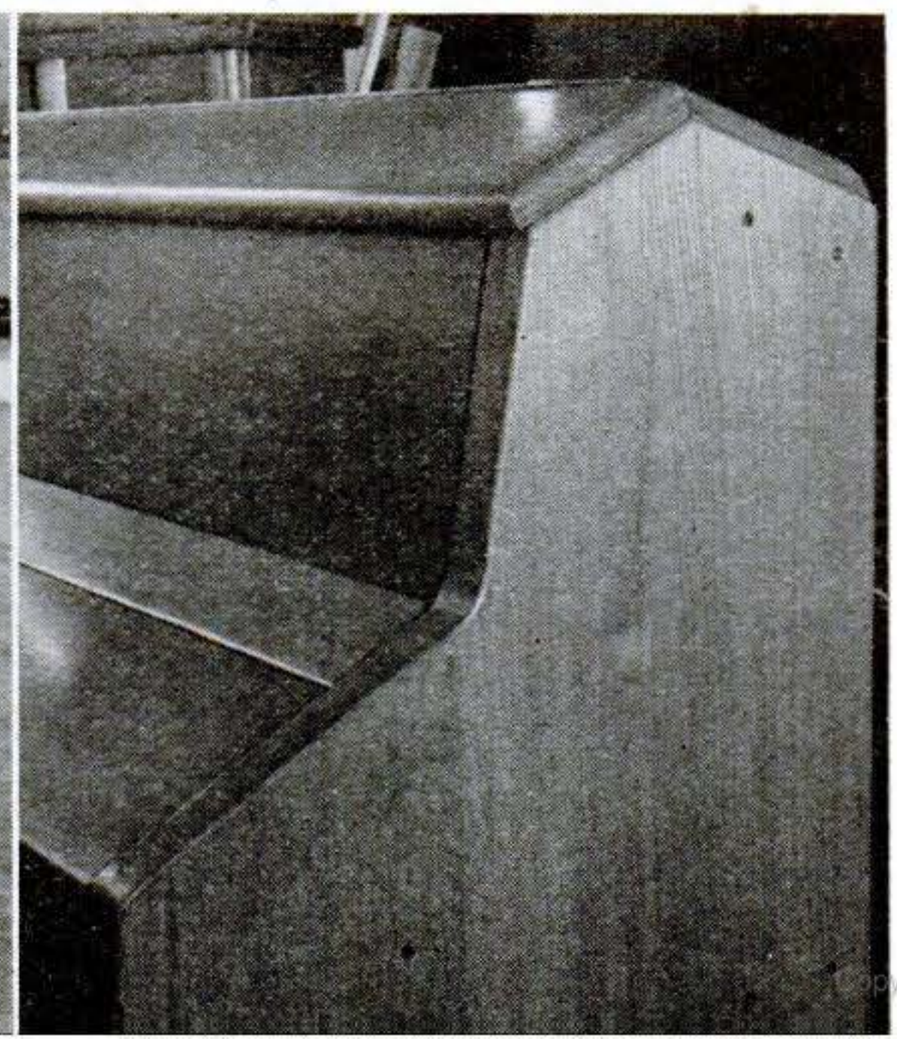
BEER FOR "THE PROFESSOR" at the keyboard is set at his left on a stainless brass plate. His cigarette can't burn the keys. They are of double-thick plastic and are fireproof.

This Piano Can Play Rough

PUT an ordinary piano in an Army, Navy or Air Force club and it soon gets burned, stained, strained and booted into a state of near collapse. From its experience reconditioning hundreds of pianos that had become delapidated in this way, the Lambert company of London, England, has devised the odd-looking new model shown on this page. The novel instrument slyly outwits careless music lovers who would set their beer mugs down on its top. It defies them to burn it with their cigarettes and is well fortified against rhythm-conscious pianists who beat time with their boots.

MORE VOLUME is quickly provided by sliding open a panel above the pedals. British servicemen haven't hesitated to kick holes in older pianos to get more sound out of them.

NO STAINS ARE POSSIBLE on the unusual new Lambert piano, which has a cellulose finish. And a man couldn't set down a glass anywhere on its sloping surfaces if he tried.



Copyrighted material

MR. & MRS. HARLOWE ZINN in their seven-passenger 1918 Stanley Steamer. The car weighs 4,600 lb. In 1918, it cost $3,100. Wire wheels were $100 more.

His Stanley Steamer Is Only 2 Years Old

The day that the reborn antique rolled down the street under its own steam was a big one for this engineer.

By Gardner Soule

THIS story could be told in 19 words: Like millions of other Americans, Harlowe Zinn bought a used car, fixed it up and now drives it around.

But the used car that he bought was a 1918 Stanley Steamer.

He bought it in December, 1949.

"I thought I could have it in shape in no time," says Zinn, a mechanical engineer who has tinkered with cars for 30 of his 42 years.

But it took him several weeks just to chip away the rust, and 10 months of back-breaking work to make the chassis ready to run.

When Zinn did take his first ride in the chassis—in October, 1950—it was the day his steamer was reborn. That makes it two years old next month. And Zinn says now of that first ride:

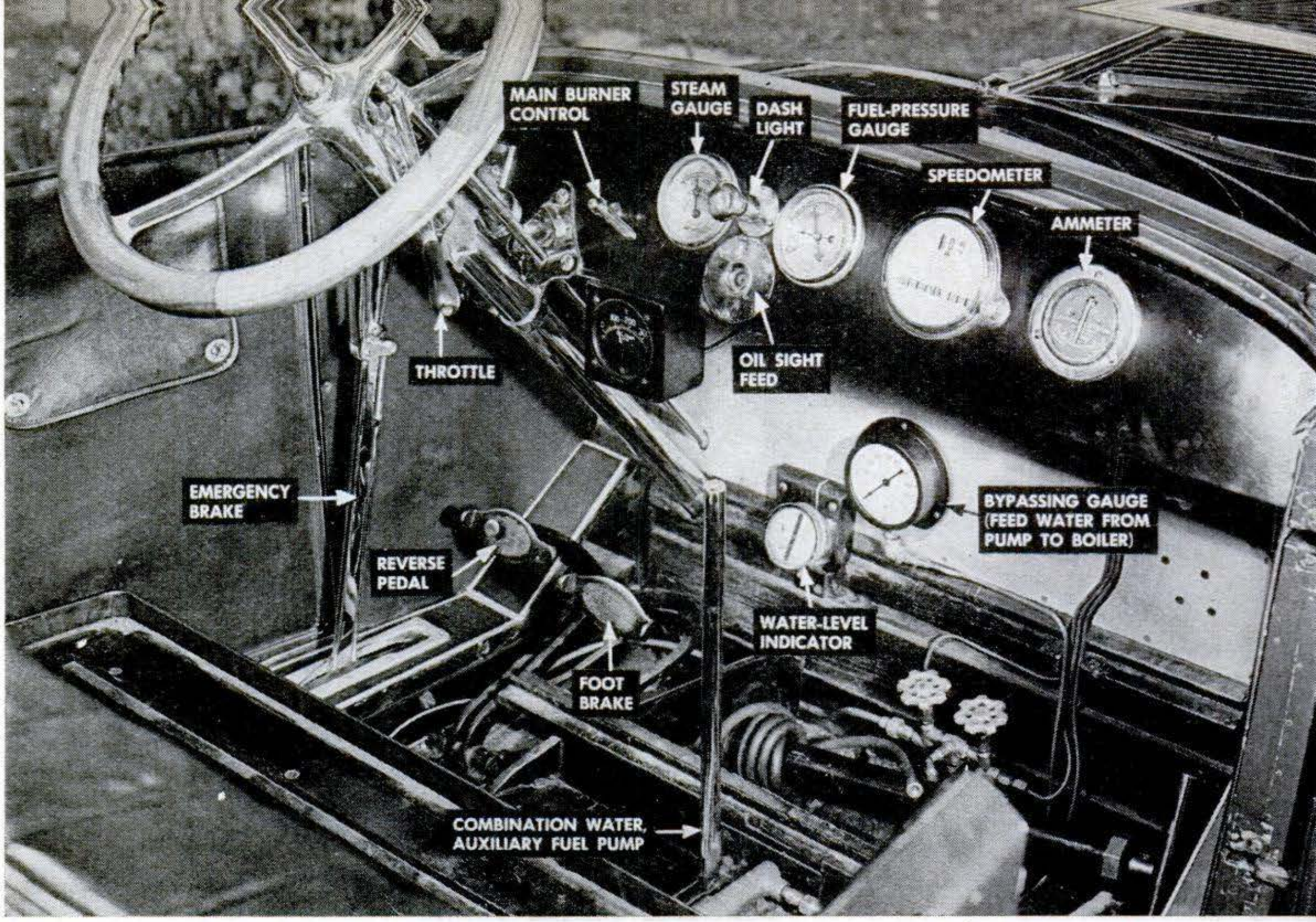
"It was the biggest day in my life."

She Ain't What She Looks to Be

The steamer looks like a gasoline buggy, but about all the two have in common is that both run on four wheels.

Under the steamer's hood, there is no engine. Instead, there is a boiler, inside of which water is turned into the steam that propels the car. A burner right under the boiler provides the necessary heat. The boiler is drum-shaped, 23 inches in diam-

Copyrighted material



DASHBOARD and what's under floorboards are shown here. Klaxon horn button (not shown) is under the reverse pedal. Light switches (not shown) are at left on dashboard.

eter, 14 inches high and 300 pounds in weight.

Zinn put a new boiler into his car. He had to lower it into its cradle by chain hoist, then line it up with the piping and steam connections. This was one of the shorter chores. It took Zinn a week.

Tubing, Tubing, Everywhere

Yards and yards of tubing carry water, steam and fuel all through the insides of a Stanley. Tubing carries water from the water tank (underneath the car) to the boiler. Tubing carries steam from the boiler through the throttle valve through superheating coils and back to a simple steam engine (under the back seat). More tubing carries fuel from the fuel tank (where your gas tank is) to the burner (under the boiler). There is lots more tubing. It twists and turns, up and down, in and around, behind the dash, under the car, around the boiler.

All the tubing has to be in place, open and functioning. Much of the tubing on Zinn's car had split. Zinn made careful sketches, took it all out, put some back, and in his workshop cut, bent and flared new tubing to replace more. This took weeks.

When he turned to the engine, Zinn took the casing off, adjusted the bearings and crossheads and saw to it that everything was clean and back in place.

There were dozens of other tasks. After 10 months of work, Zinn thought the chassis would run and he got ready to start it.

When Zinn let fuel from the main fuel line into the burner, there was a roar. Later, he learned the roar is normal when the burner is cold and you let into it as much fuel as he did. But then he wasn't sure what was going to happen.

Alarmed neighbors arrived.

When Zinn tried to work up steam, the steam poured out in clouds because he hadn't hooked up the exhaust connection.

More alarmed neighbors arrived. So did Mrs. Zinn, a charming brunette, who by then had learned to take almost anything in stride except steam billowing over her home.

But the steam this time was a sign that things were right—not wrong. Zinn had never driven a steamer. He had, however, learned by heart the function of every part because he had handled every single part

Copyrighted material

BOILER, the white, drum-shaped object with dark top, produces the steam that powers the car. Stanley boilers never did explode, despite rumors you may have heard about them.

of the chassis and engine as he restored them.

Zinn, his wife and their son Bobby climbed aboard the chassis and rode around their home town, Upper Montclair, N. J.

It was so much fun that Zinn allowed himself four or five short rides late in 1950 before he got busy on the car's body.

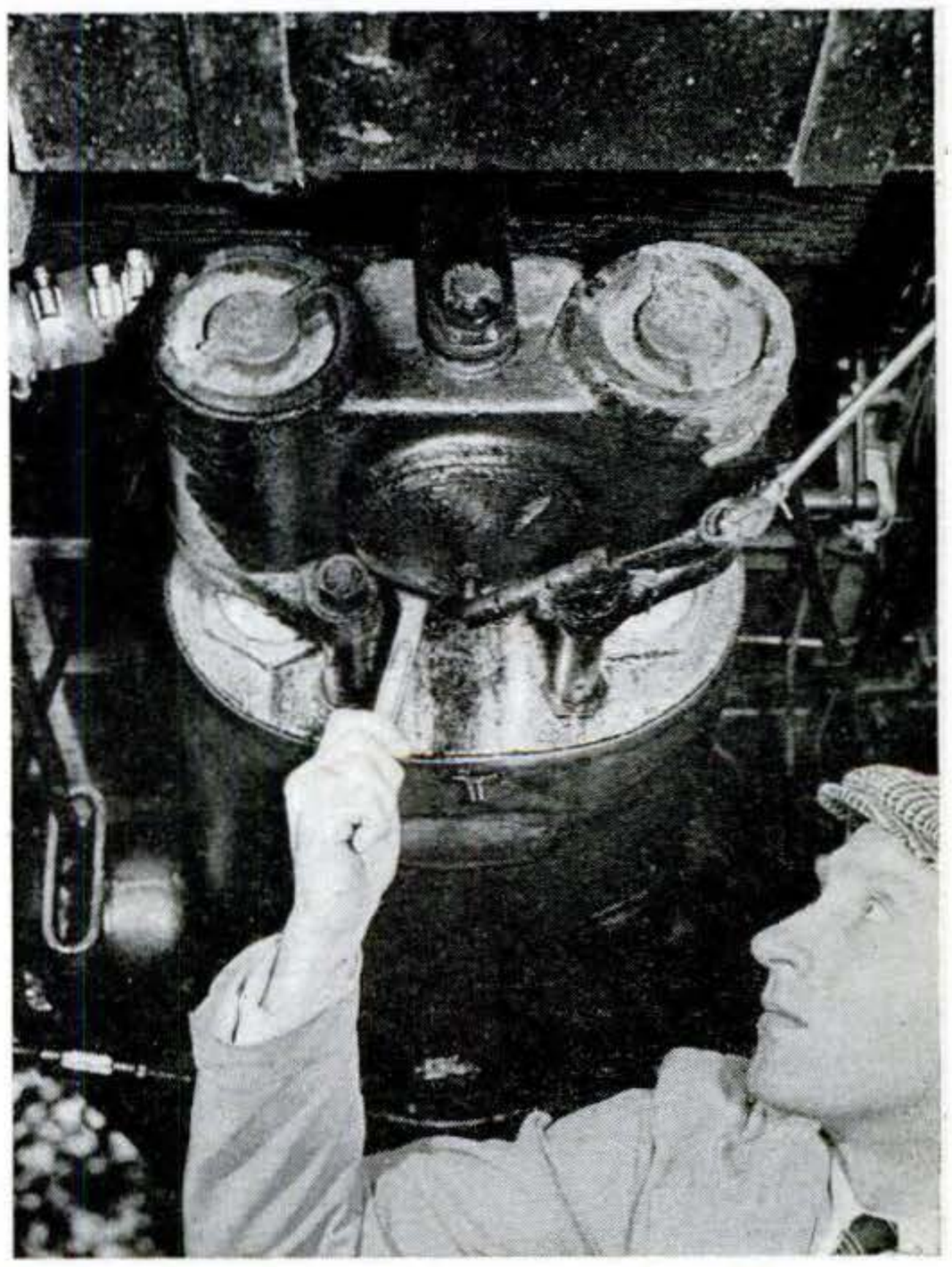
Only the Beginning, Folks

Now he had to fit pieces in to replace pieces that had rusted out completely, sandblast fenders and other parts that could be taken off, and top off with what he calls the "interminable" job of priming, wet-sanding and finishing. Zinn put on six coats of a lacquer primer and four of colored lacquer, and rubbed down each of the coats by hand.

Actually, it took him March, April, May and June, 1951, to do the "interminable" job.

Zinn had the top made and the front seats recovered, and he had the boiler wrapped up in four layers of piano wire to strengthen it. Otherwise he did all the work.

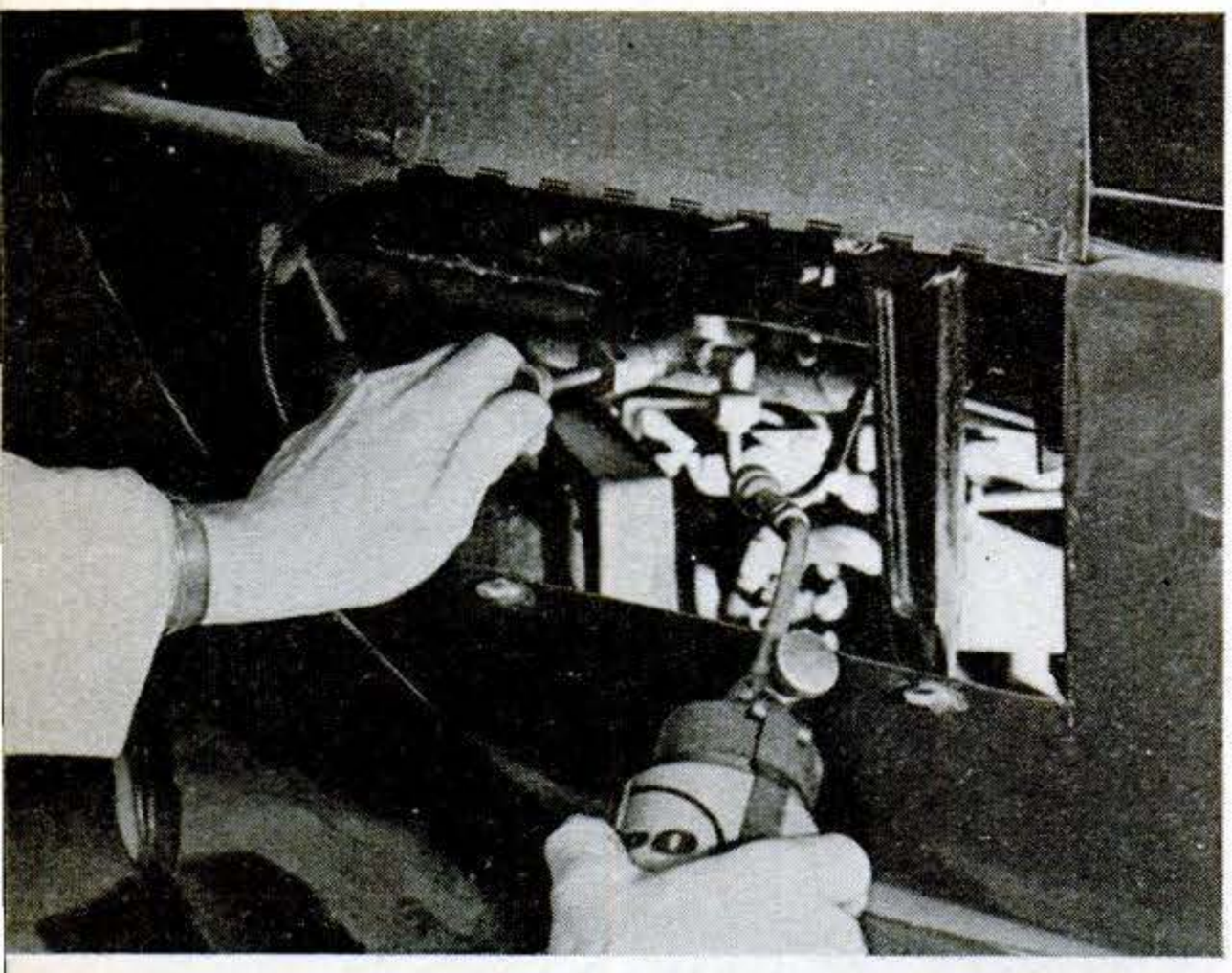
By October, 1951, 12 months after the first ride and 22 months after Zinn received



SIMPLE ENGINE under rear seat has 13 moving parts. Engine is two-cylinder, four by five, slide-valve type, double-acting. Engine, differential, are in oiltight housing.

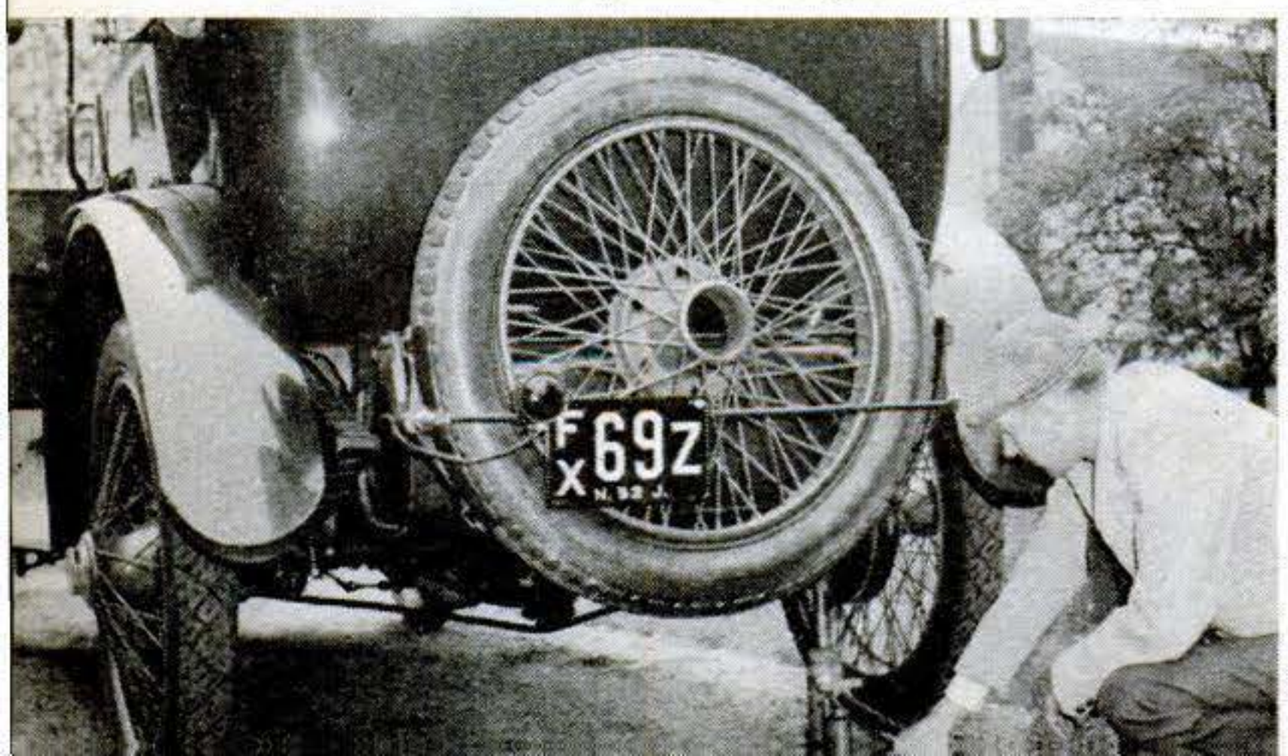
Copyrighted material

IT TAKES ZINN 30 minutes to start his Stanley, 20 if he's in a hurry. Procedure is shown in photos in this column. First step (above) is to pump air by hand into the pilot tank.



SECOND STEP is to light propane torch and use it to ignite pilot light (that's what's happening here). After pilot light burns for a while, Zinn turns on the main burner.

TO WARM UP ENGINE, Zinn jacks up drive wheel, as do many Stanley owners, before he starts car. Nonskid tires, 34 by 4, on demountable rims, take 60 pounds of air.



the steamer, the car, gleaming in gunmetal gray, was ready for a big test. On October 13, 1951, Zinn drove to Devon, Pa., for a major antique-automobile show. From Devon he returned with a covered silver vegetable dish with an inscription that reads, "First-prize Class S, Antique Automobile Club of America." S stands for steamer.

The Stanley cruises now at about 25 to 30 miles an hour. Zinn thinks he could get it up to 60, but he doesn't plan to try. "I want to preserve this car, not break anything," he says.

120 Miles to a Tankful—of Water

He gets about 110 to 120 miles on one tank of water, 12 to 13 miles to a gallon of fuel (kerosene and non-leaded gas mixed). The Stanley gives him a quiet ride. An occasional hissing of the burner is the only noise.

To drive, he uses (1) the steering wheel, (2) the throttle on the steering-wheel column, (3) the right-foot pedal to brake and (4) the left-foot pedal to reverse. There is no gearshift. In this way, Stanley Steamers anticipated post-World War II gearshift-less cars by 50 years.

Zinn's wife, Marjorie, incidentally, has never driven the steamer. It isn't that she's afraid that a 34-year-old car might break down; she simply has her own 1947 Cadillac.

Get a Horse, Mister!

The Zinns by now are used to the comments (spoken and unspoken) that people make when they see the car. Garage mechanics display awe or reverence when Zinn drives in. Passers-by stare. "Of course," remarks Marjorie, "kids say, 'Get a horse.'"

Drivers are inclined to pass the steamer, Zinn has noticed, then realize it looks different and cut in closely in front of him as they peer at it.

There is a good deal of maintenance that Zinn must do. Those 746 tubes inside the boiler, for instance, must be wire-brushed out occasionally—a job that a gasoline-car owner does not have.

Most of the tubing in the car is copper, and it must be polished. This takes a night or day out of most of Zinn's weeks.

And then in the winter all tubing must be blown out by compressed air else water will freeze and burst it. Some tubes are so small a drop of water freezing can split

Copyrighted material

THROTTLE, a lever on steering-wheel column, regulates speed of steamer. Zinn locks throttle when parked, unlocks it here. Car did not have mirror in 1918; law requires one now.

them open. Zinn last winter missed one tiny tube. It burst.

Besides all this, Zinn must mix the fuel himself—as fast as he uses it up.

Puts in Every Detail

Zinn restored his steamer with careful attention to insure its being exactly the way the 34-year old car appeared when it was new. Almost every detail—including the spare wheel at the back, the upholstery and every gauge on the dash—is as it was then.

Zinn is chief engineer of the Flintkote Co. (roofing, insulation, etc.). He is a pillar of his community, with a beautiful suburban home and a Ford station wagon that he drives to work. He had yachting as a hobby —till December, 1949, that is. What makes a man like Zinn buy an antique automobile and spend countless and endless hours restoring it? Why did he do it, anyway?

George Overbury in *The Story of a Stanley Steamer* says that a man does it because of the creative urge. There's something to it in Zinn's case anyhow.

When he was 16, Zinn restored a motorcycle. He bought it for $2 from a junkman and carried home the pieces in two bushel baskets. He had the motorcycle running in several weeks.

"I thought I could make almost as good time with the Stanley," he laughs.

The Hair-Curling Question

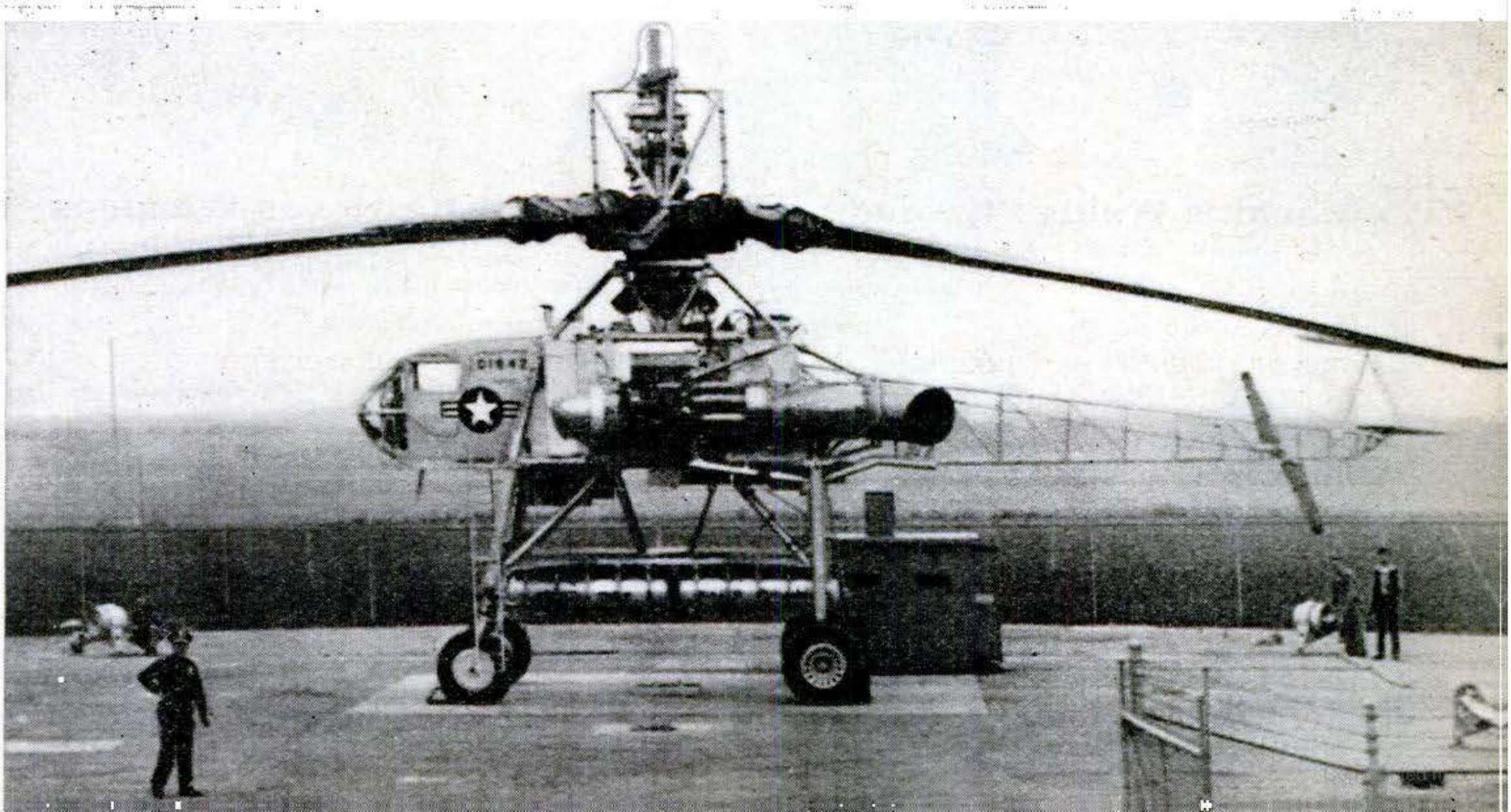
Today, after that 30 months of labor on the steamer, Harlowe Zinn loves to answer questions about his car. There is just one question that can upset him.

It is the question that antique-automobile owners use on each other as a pet gag. But when it comes from ordinary citizens, it can curl Harlowe Zinn's straight hair.

"How on earth," people are forever asking him, "did you ever find a steamer in such *good* condition?" END

Helicopter Picks Up Cargo Like a Lumber Lift

THE jet-powered XH-17, Howard Hughes' new helicopter, has moved out of its hangar for ground tests. Designed for the Air Force for short-range moving of heavy military equipment, it will straddle and pick up cargo like a lumber lift. Two GE turbojets power the craft, supplying gas pressure through ducts leading up the rotor shaft and out to the blade tips. The 'copter appears to weigh at least 10 tons, stands about 40 feet high and spans about 110 feet from blade tip to blade tip.

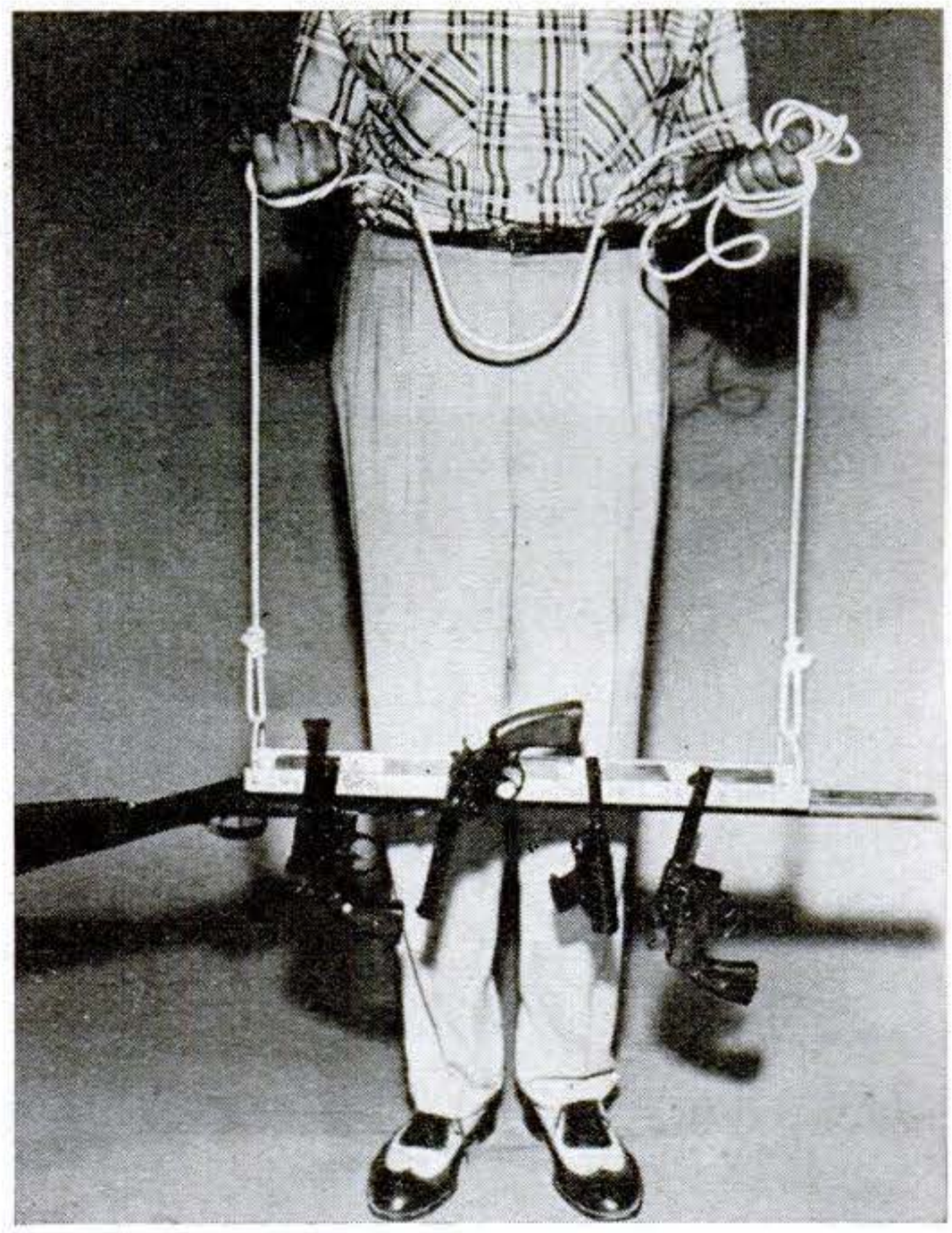


Newest Flying Boxcar Carries Its Gas on the Outside

THE newest member of the Flying Boxcar family, the Fairchild C-119H, lugs all its fuel in pods beneath the wing. Big brother of the C-119C, its wing span has been extended to 148 feet. It can carry 27,200 pounds of cargo, take off over a 50-foot obstacle in 2,600 feet, land in 1,300 feet with 72-m.p.h. touchdown speed.

Machine Welds Plywood Walls

PLYWOOD panels can be "spot welded" in place fast with the high-frequency electric gluing machine above. The machine produces a quick set in a number of small spots, and these "welds" hold the plywood to the furring strips while the rest of the glue sets normally. The gluing method eliminates exposed surface nails, makes better joints and permits use of thinner paneling. Wood Welding, Inc., Burbank, Calif., makes the machine.



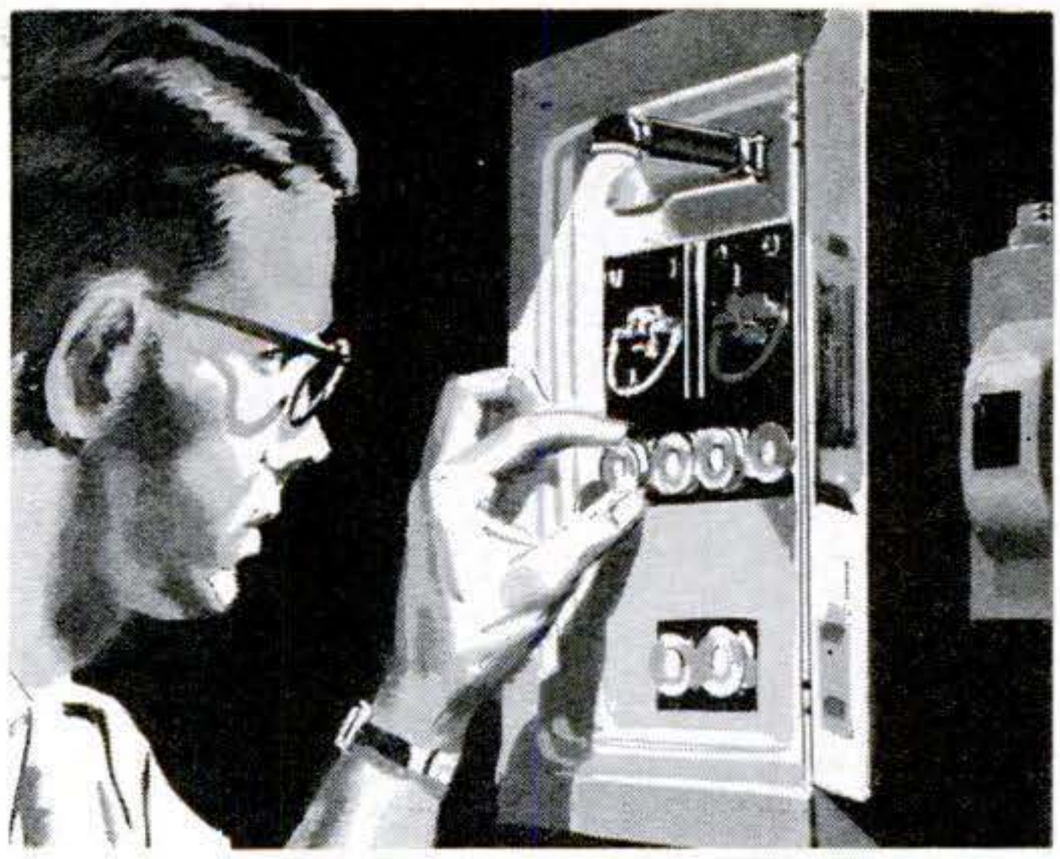
Magnet Retrieves Weapons

THE magnet above will help police retrieve guns and knives that have been tossed into rivers, crevices, deep wells and other hard-to-reach spots. Permanent magnets bolted together between two parallel steel conductor bars form the 13-pound unit. It can be lowered on ropes by one man and rocked back and forth to reach between stones and into other recesses. Made by the Miami Magnet Co., Miami, it is said to lift up to 1,000 pounds.

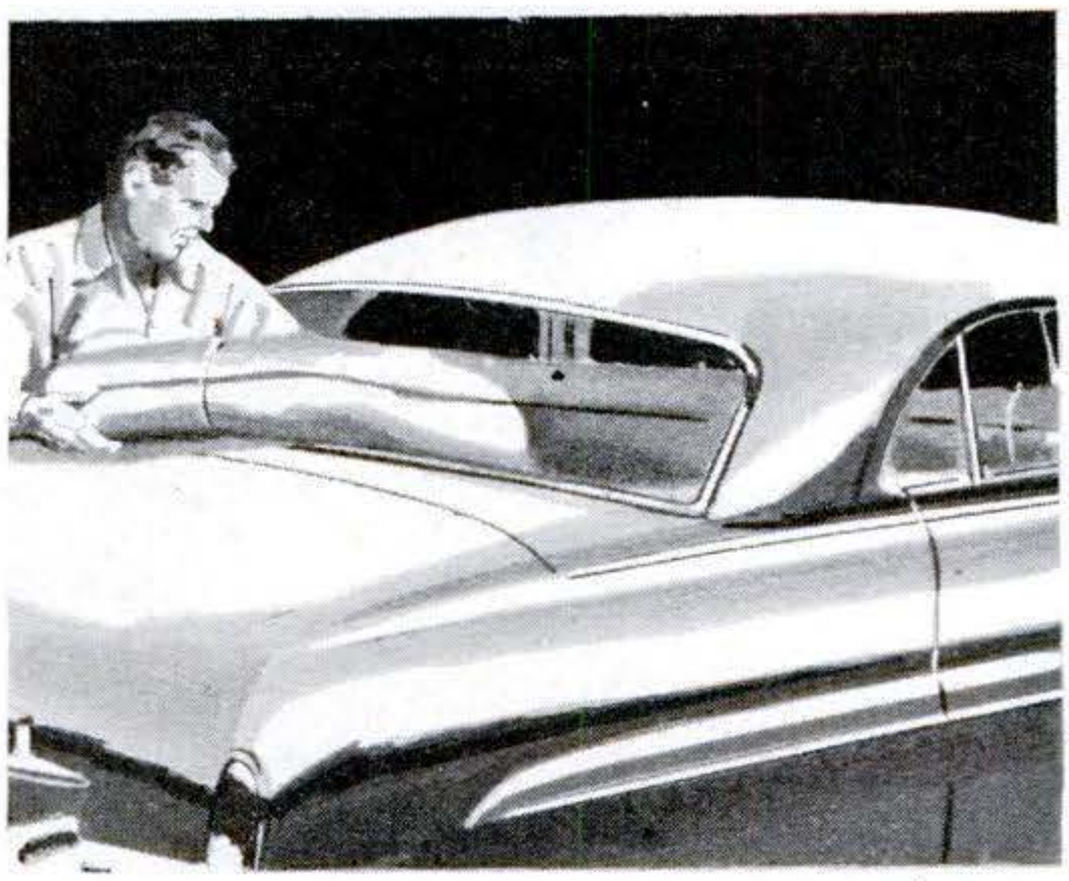
Copyrighted material

I'd like to see them make...

Everyone has his own pet idea of some gadget he would like to see in general use. What is YOURS? *Popular Science Monthly* will pay $5.00 for each one published. Use government postcards only. Contributions cannot be acknowledged or returned.



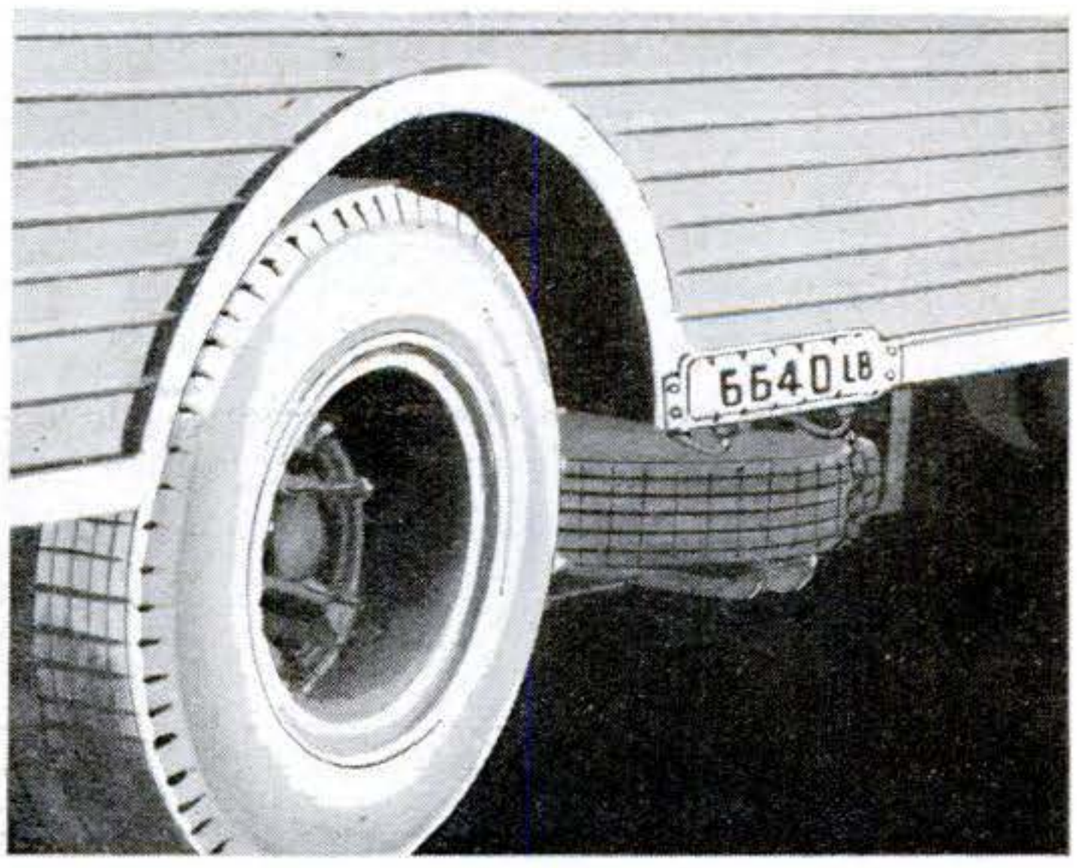
A LIGHTED FUSE BOX with a small battery-powered lamp built into it to eliminate hunting up a flashlight every time a fuse blows.—*Joe Schulte, Grosse Pointe, Mich.*



A ROLL-DOWN WINDOW at rear of car for better ventilation in hot weather. It would be useful, too, when transporting a long object such as a rug.—*Jerry Cox, Mascoutah, Ill.*

SMALL POCKETS ON CHILDREN'S MITTENS to hold their Sunday-school or lunch money. Pockets should close securely with snaps or zippers.—*Mrs. Ernest Miller, Lansing, Mich.*

A HYDRAULIC SHOCK ABSORBER for high-powered rifles. It would take care of the kick-back that produces a sore shoulder after a day's shooting.—*Robert Otto, Elkton, Ore.*



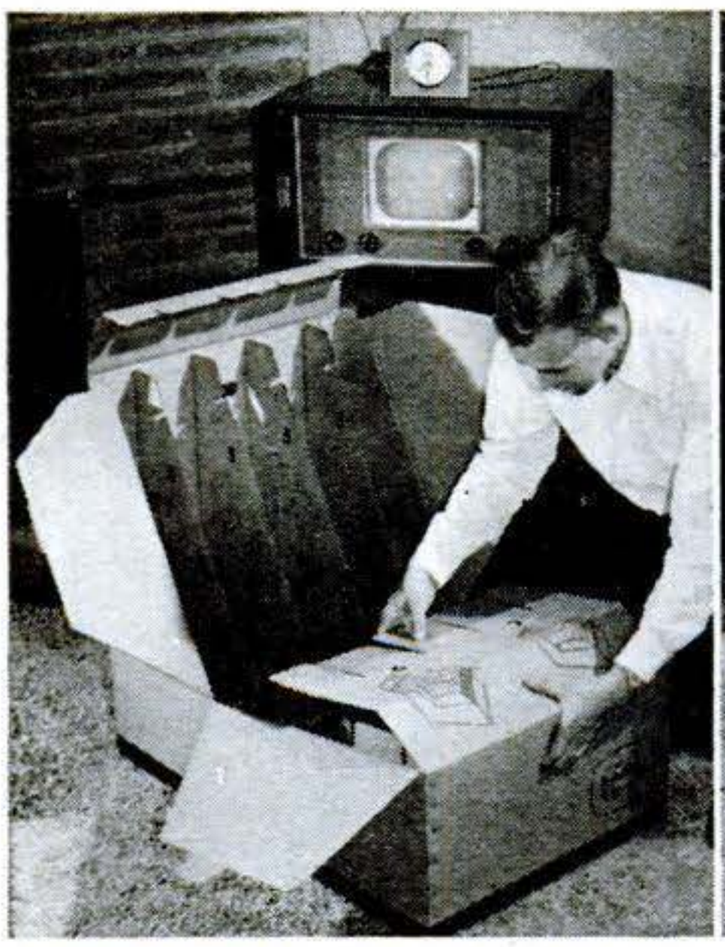
TRUCKS WITH BUILT-IN SCALES to prevent overloading, eliminate trips to scales and let consignee see weight of the load.—*E. E. Youngkin, Altoona, Pa.*

Copyrighted material

Cardboard Chair Put Together in 5 Minutes

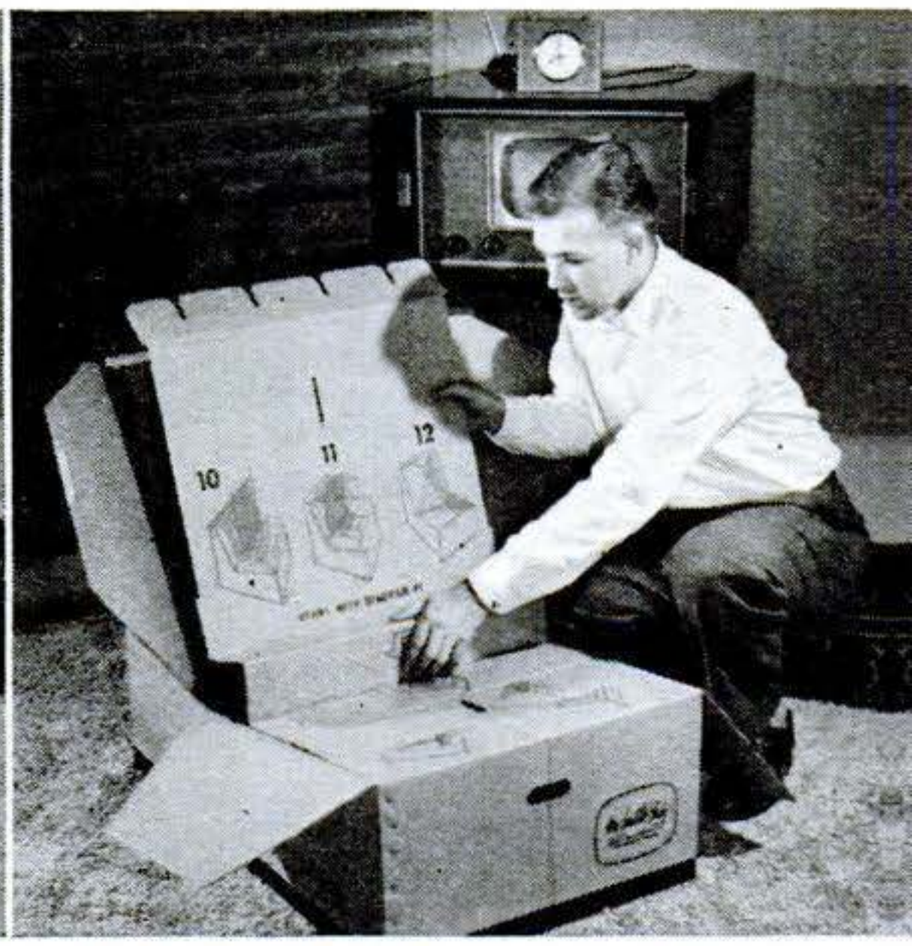
It weighs only 16 pounds, holds a ton and costs $20.

1 **EIGHT PIECES OF CARDBOARD**—an outer frame, four uprights, two seat braces, a back brace—will form chair. Time: 7:55 p.m.



4 **SEAT FLAP** at front of chair is bent into place with slots straddling uprights.

5 **SEAT BRACES** for center section are bent into U shapes and pressed over uprights.



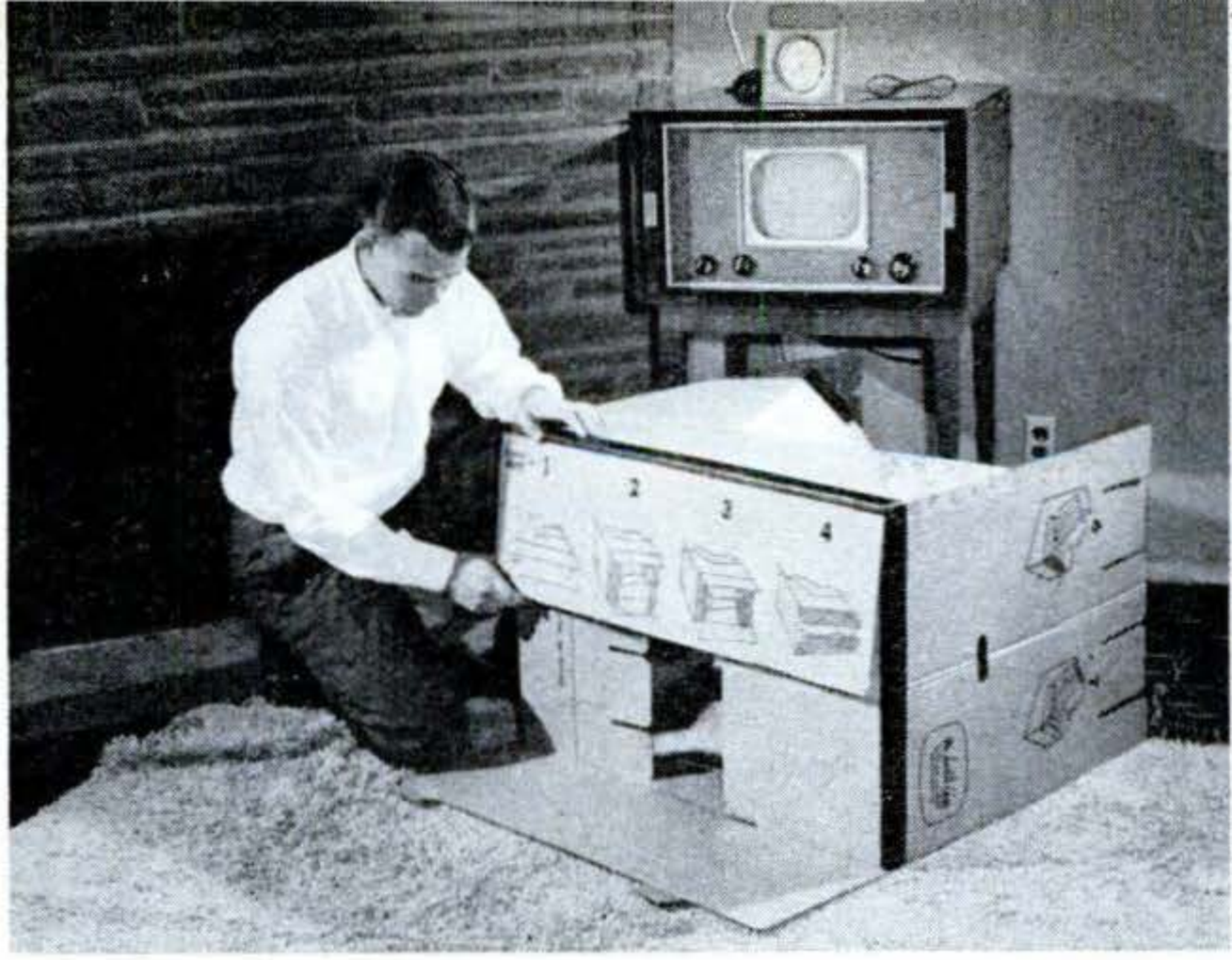
6 **BACK BRACE** is inserted behind last seat brace, upper slots are fitted over uprights.

7 **SEAT AND BACK WINGS** are folded over the bracing and locked into place with tabs.

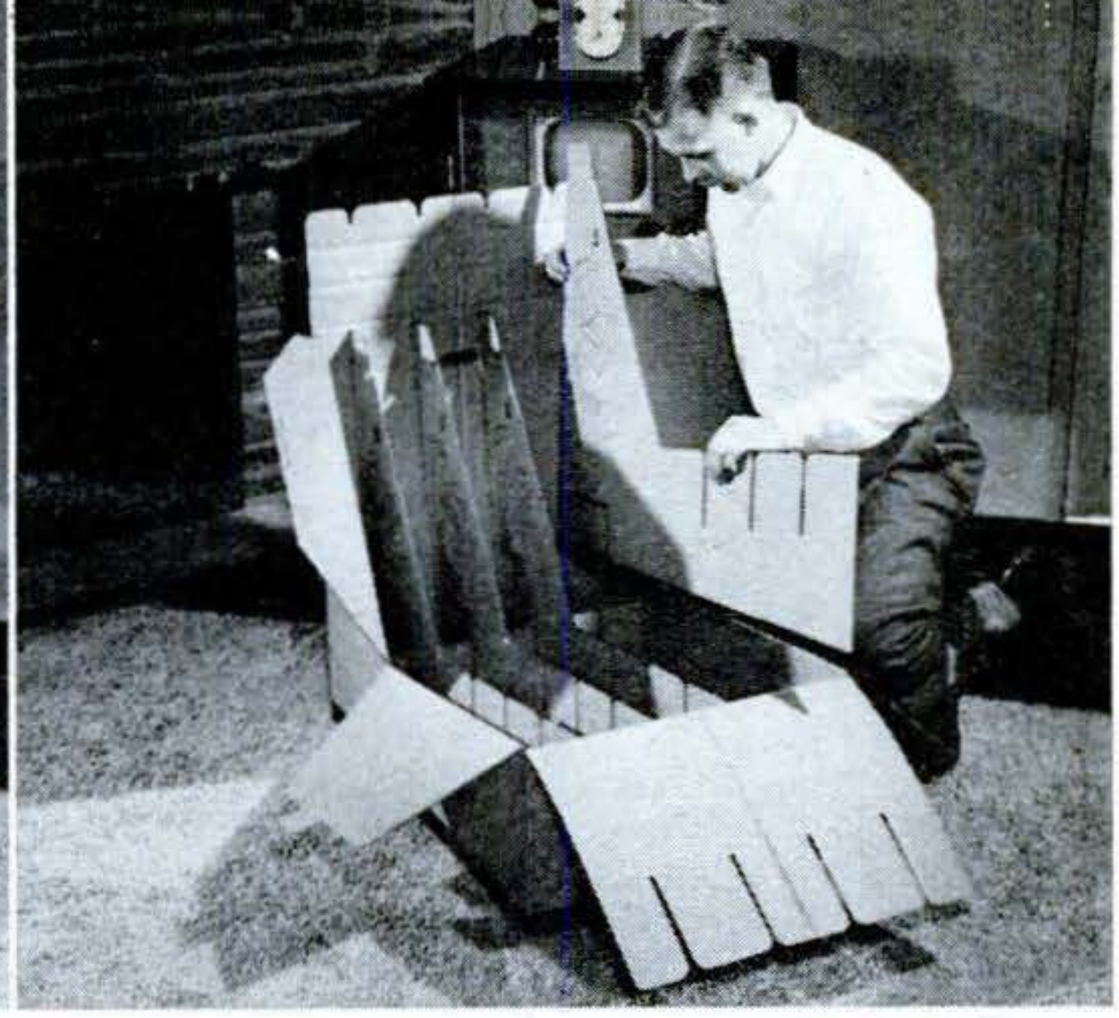
8 **CUSHIONS** pad back and seat. They are spring-filled, covered with foam rubber.

9 **SLIPCOVER** is added and the job is done. No tools to put away, no mess to clean up.

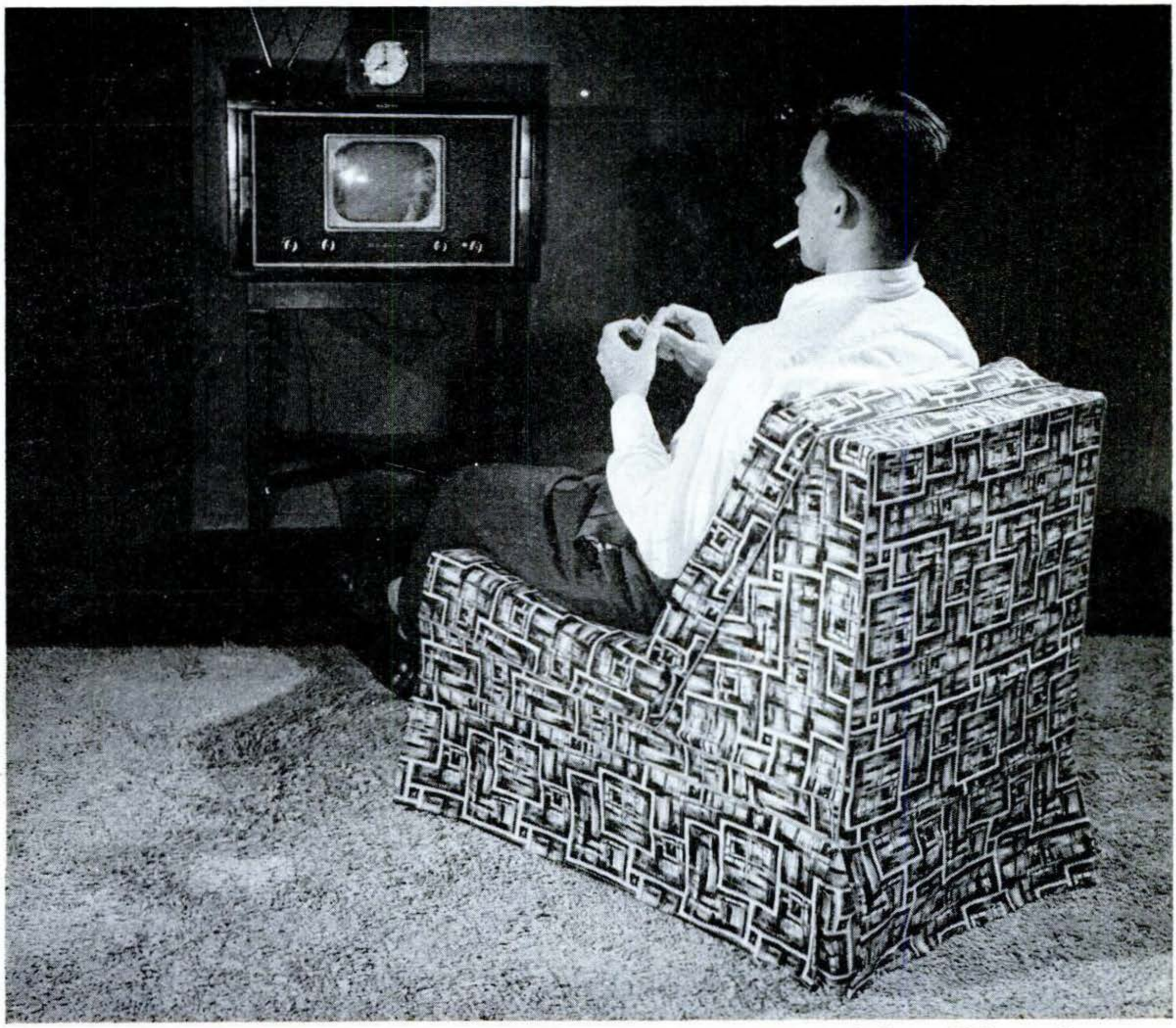
Copyrighted material



2 OUTER FRAME is bent into shape. Flaps of base are locked together by slipping tabs into slits. Note slotted inner piece in base.



3 CHAIR IS TURNED UPRIGHT and slotted portion of base is bent upward to receive the four uprights which distribute weight evenly.



10 EIGHT O'CLOCK AND THE CHAIR is in use. Expenditure—five minutes' time and $20. Inventor Earl Dallas Smith says it will support one ton and that a 595-pound man can jump on it and it won't cave in. The Comfy Mfg. Co., 295 Fifth Ave., NYC, distributes it.

Copyrighted material

TWIN-FAN PLANE, driven by new method of propulsion, is flown experimentally by French manufacturer. Plane actually consists of two mated monoplanes. Now see facing page.

Fans in Tubes Drive

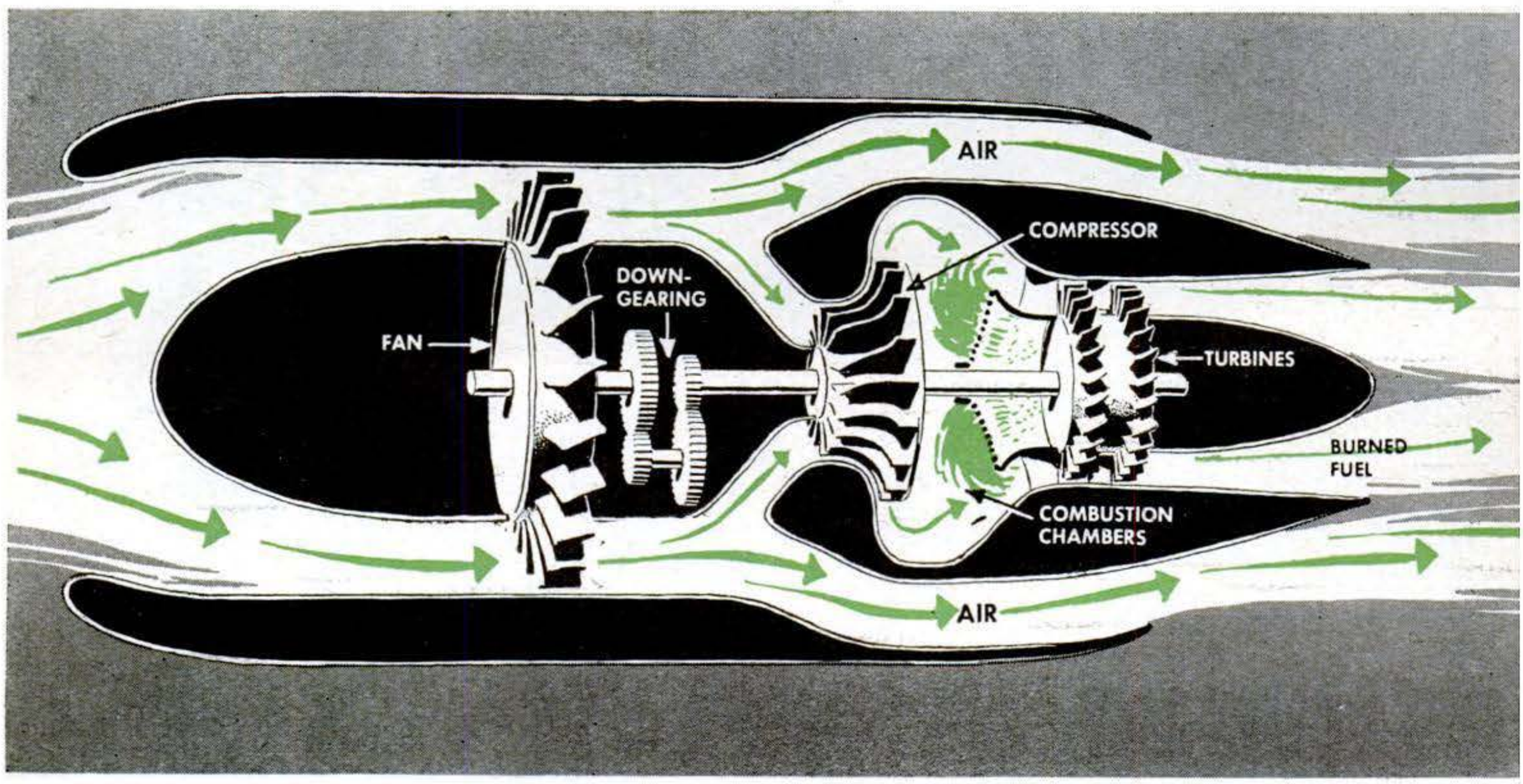
Cruising at 400 to 500 m.p.h., they're faster than propeller planes,

A NEW way to drive an airplane—using a fan enclosed in a tube—is being tried out in France by Fouga & Co. An engine turns the fan, the fan pushes air back through a tailpipe, and the plane is propelled by reaction to the stream of air.

The plane flies for the same reason that a regular jet airplane flies, but there the comparison ends. The jet emits a small volume of gases at high velocity. It flies fast fine, but at lower speeds hogs fuel. Its speed also makes it less maneuverable.

This new kind of propulsion, called the "ducted-fan engine," emits a big volume of air at *low* velocity. It flies slower than a pure jet but faster than a propeller airplane. And—here's the payoff—it gets more miles-per-gallon at 400 to 500 miles an hour than either a jet or a propeller plane.

Like the jet, the ducted-fan engine is a gas turbine. Unlike the jet, little of the volume of hot gases it generates is used



Copyrighted material

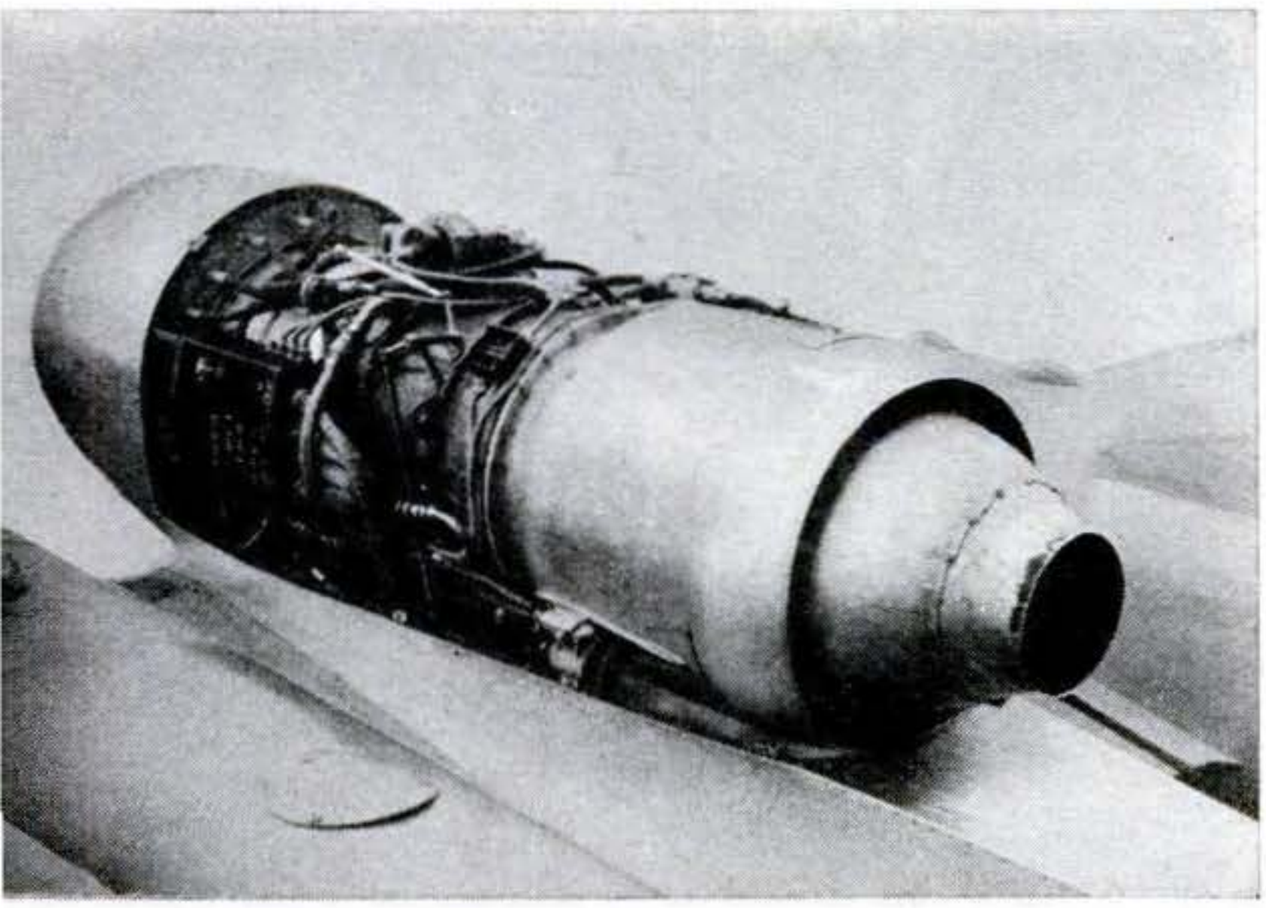
SINGLE-FAN PLANE, using same type of propulsion in similar mated monoplanes, mounts engine between fuselages. Both planes fly by reaction to air jet through tailpipe.

These French Planes

more maneuverable than jets—and will fly on less fuel than either.

directly for propulsion. Some of the energy is used to whirl the compressor. The rest whirls the fan. The volume of air going out the tailpipe is seven times the volume of the burned gases.

The ducted fan is intended to fill the big vacuum in speeds between propellers and jets. The French company, experimentally flying both single- and twin-fan planes, sees them as ideal for small, privately owned transports. END



DUCTED-FAN PLANE has double tailpipes, one within the other. From outer pipe comes great volume of fan-generated air which does most of propulsion by reaction. Relatively small amount of propulsion results from inner pipe that vents gases burned in turbine.

The Ducted Fan's Place in Aviation

700 M.P.H.

PURE JET PLANE can achieve speeds in excess of that of sound due to small volume of high-velocity gases exhausted through tailpipe of narrow diameter.

450 M.P.H.

DUCTED-FAN PLANE flies slower than pure jet but faster than propeller plane by exhausting big volume of low-velocity air through tailpipe of big diameter.

300 M.P.H.

PROPELLER PLANE flies slower than either jet or ducted fan but lands slower, can use smaller airports. It flies through displacement of air by propellers.

Copyrighted material

Auto Battery Powers Cars for Kids

MINIATURE TRACTOR, driven by electric motor, runs on endless treads through power-fed rear wheels. It goes up a 45-degree slope.

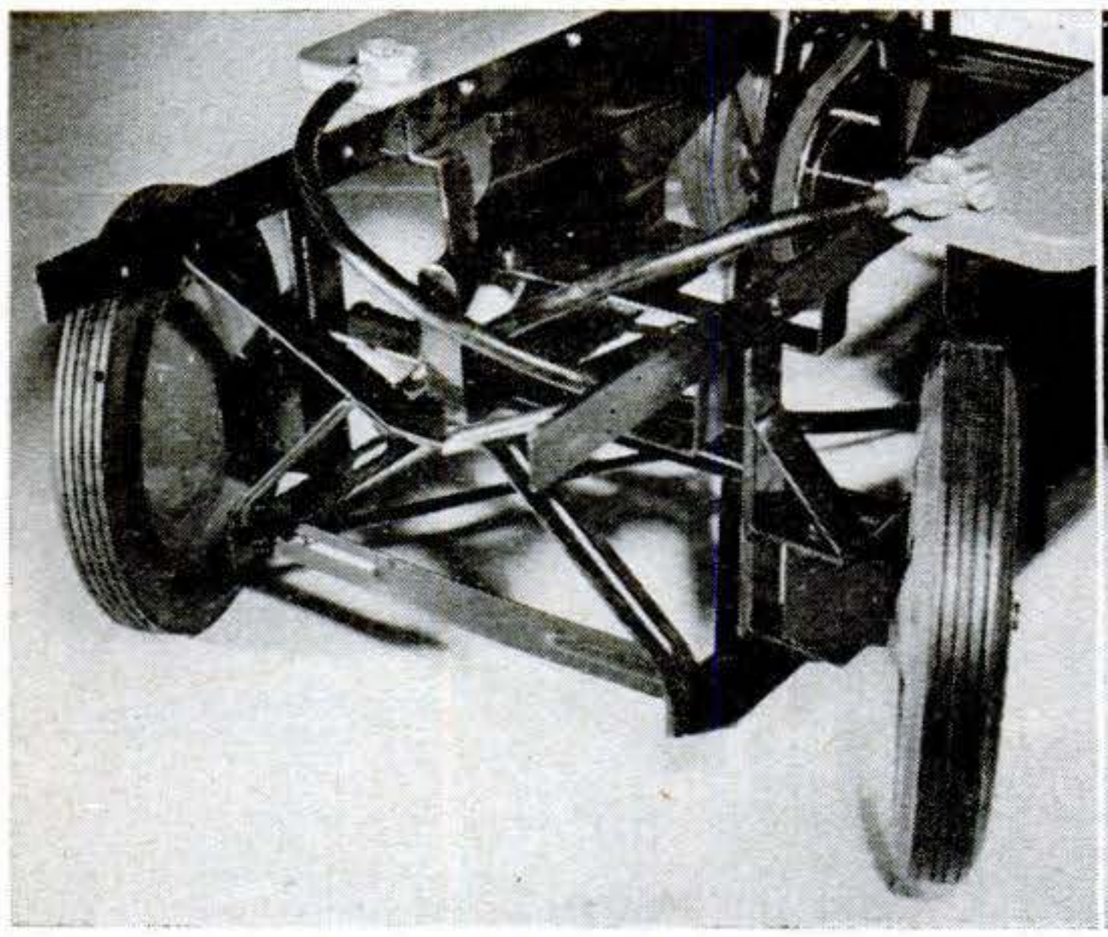
The same kind of motor that starts your car drives baby hot rods at a brisk walk.

A FELLOW who was so handy with his mitts in high school that he built an eight-tube radio set without a diagram is now building electric-powered cars for kids to play with.

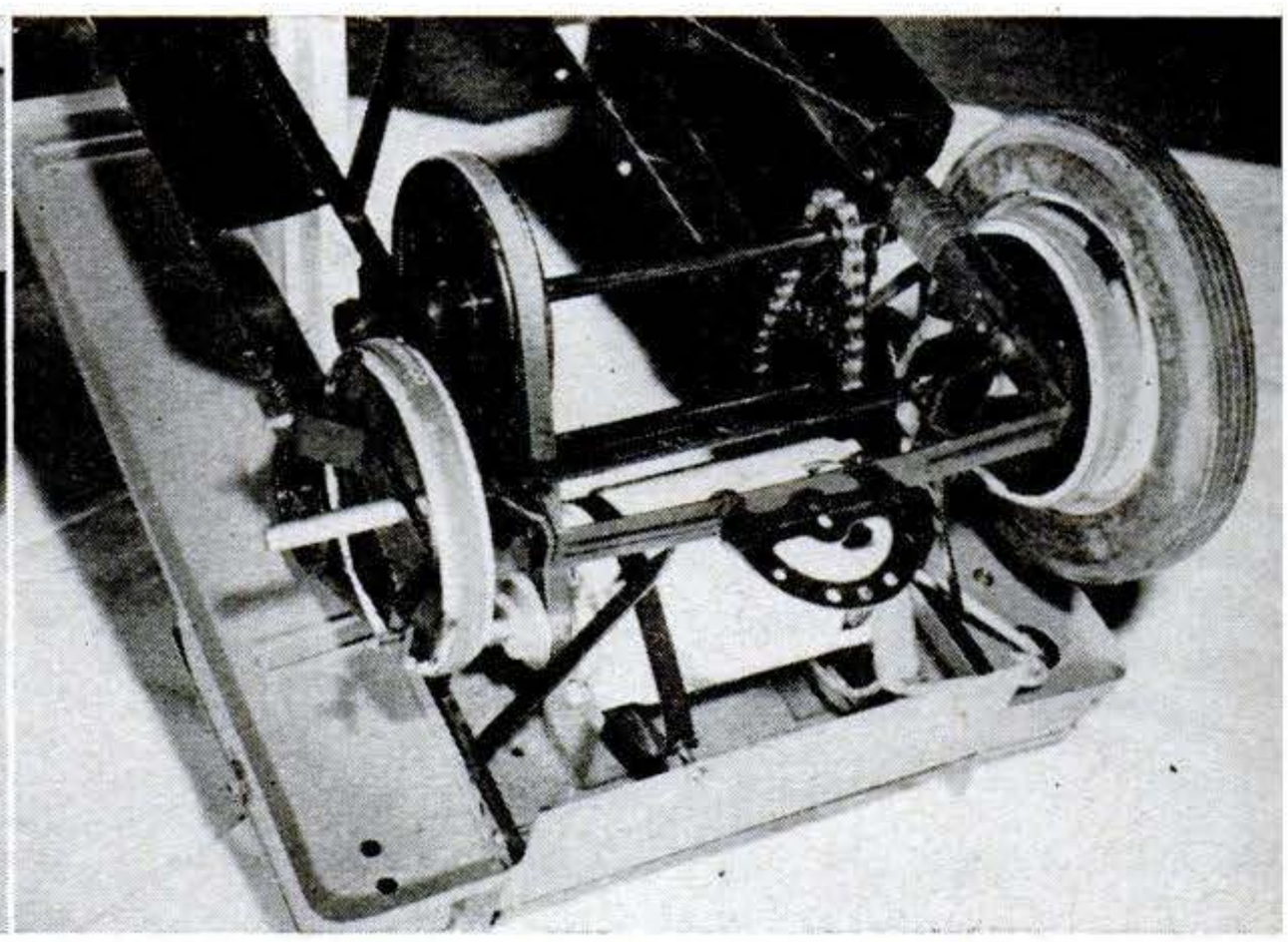
Detroit-born George Ford (no relation to Henry) calls his automobile for pint-size citizens the Powercar Junior. It runs on a storage battery. It reverses, as any automobile should. It has headlights, a tail light and brake. With an average-weight youngster at the controls, it will roll along on level ground at about the speed of a brisk adult walk.

Ford also makes an electric tractor in his factory at New London, Conn. Gearing gives it an amazing amount of power.

Ford's cars and tractors are powered by a modified Ford V-8 starting motor. Ford wanted to put a reverse on it, but was told



CAR'S FRAME is made from ⅛" metal stampings welded together. X-braced at four points, it weighs 20 lb. Complete car, battery excluded, weighs 90 lb., is 24" high, 40" long.



DRIVE FROM MOTOR has 3-stage reduction—from a pulley on motor to one on an idler, from a sprocket on idler to another on a second idler, thence by pulley to rear wheels.

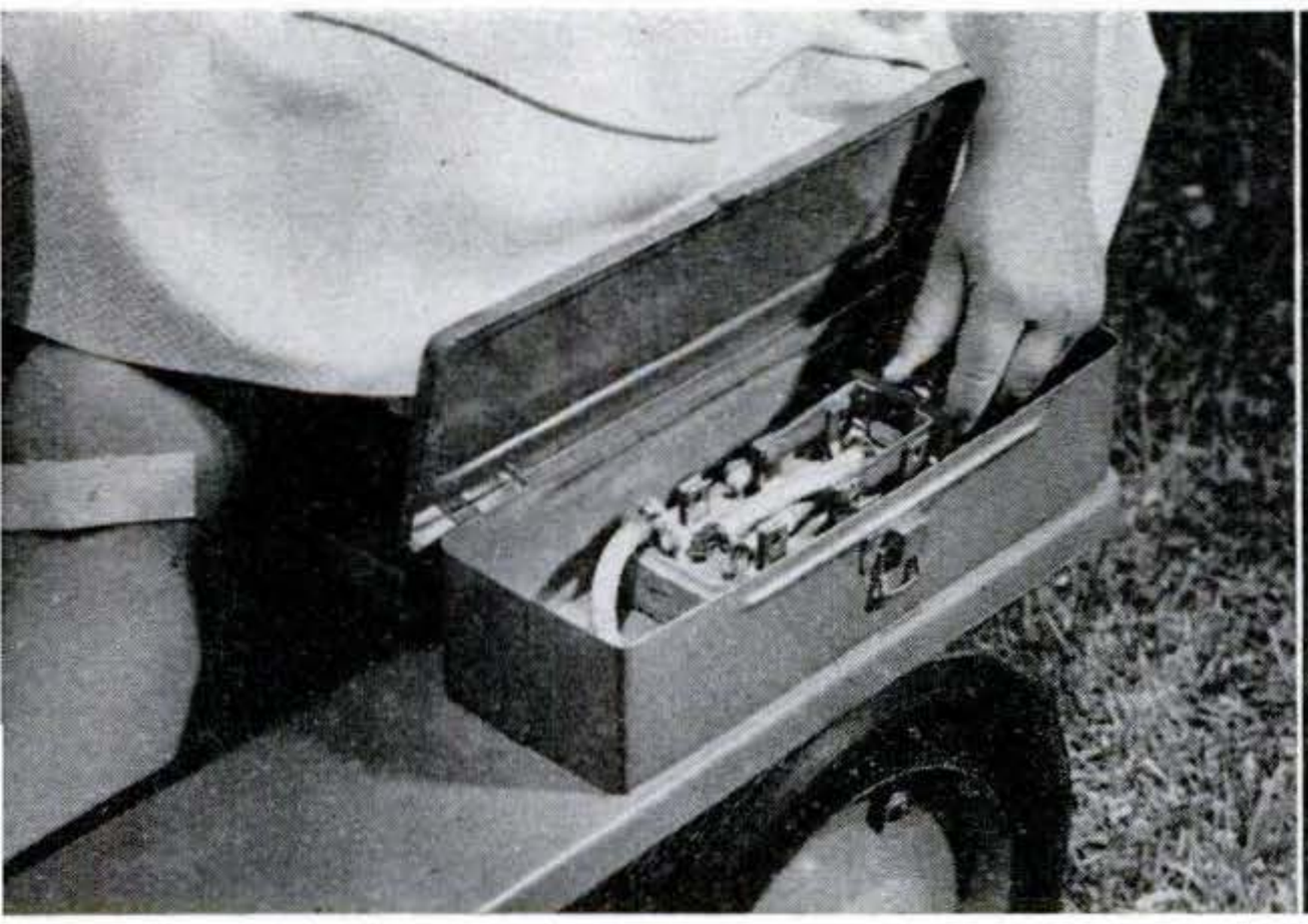
Copyrighted material

PASSENGER TRAILER and wood dump truck can be hooked to car. Car retails for $109.50, battery for $15, and recharger, which works off house current, for $12.95. Hand brake stops car by friction shoe on right rear wheel.

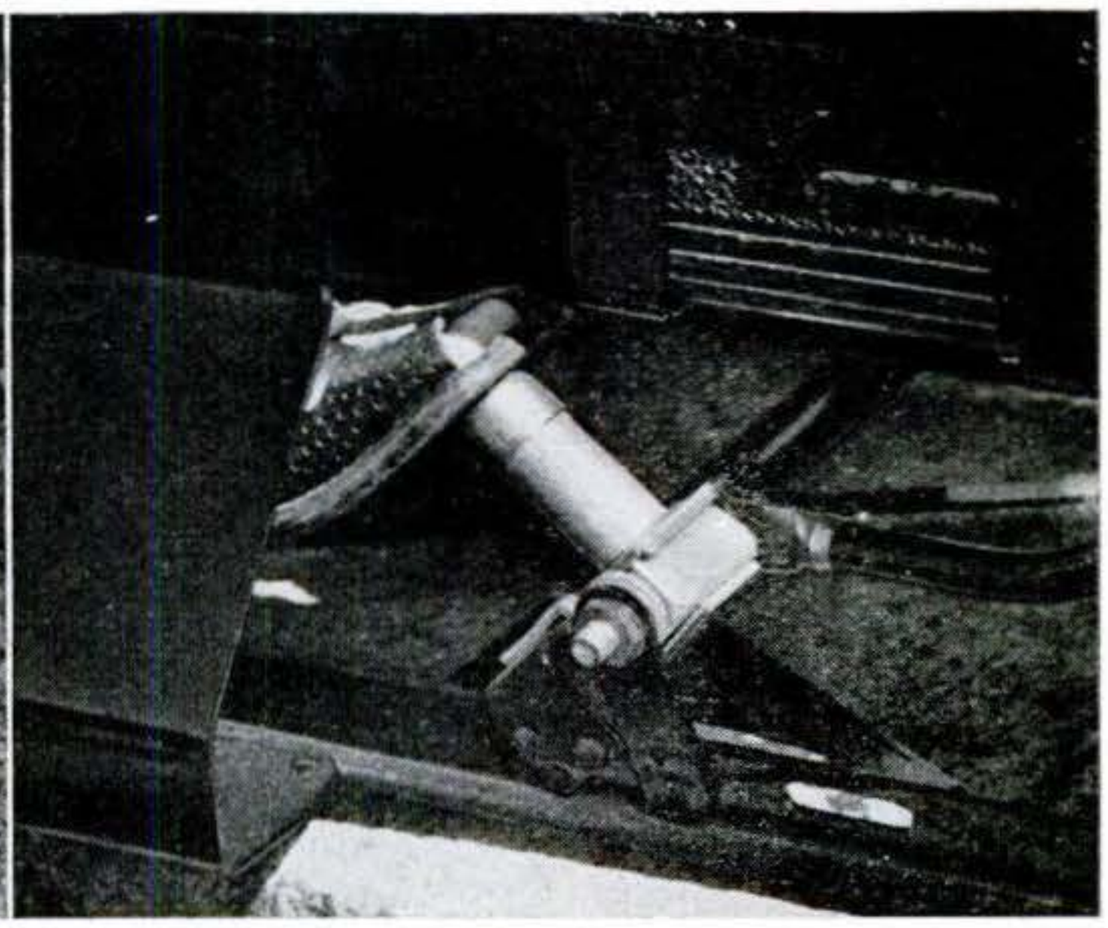
it couldn't be done. So he did it anyway.

To take the loads imposed, the regular bronze bushing bearings are replaced with needle bearings. An automobile starting motor gets only momentary, intermittent use. In the little cars and tractors, the use is intermittent but far from momentary.

The little cars and tractors manufactured by Ford are sold by Mystic River Sales Co., Mystic, Conn.—*Devon Francis.*

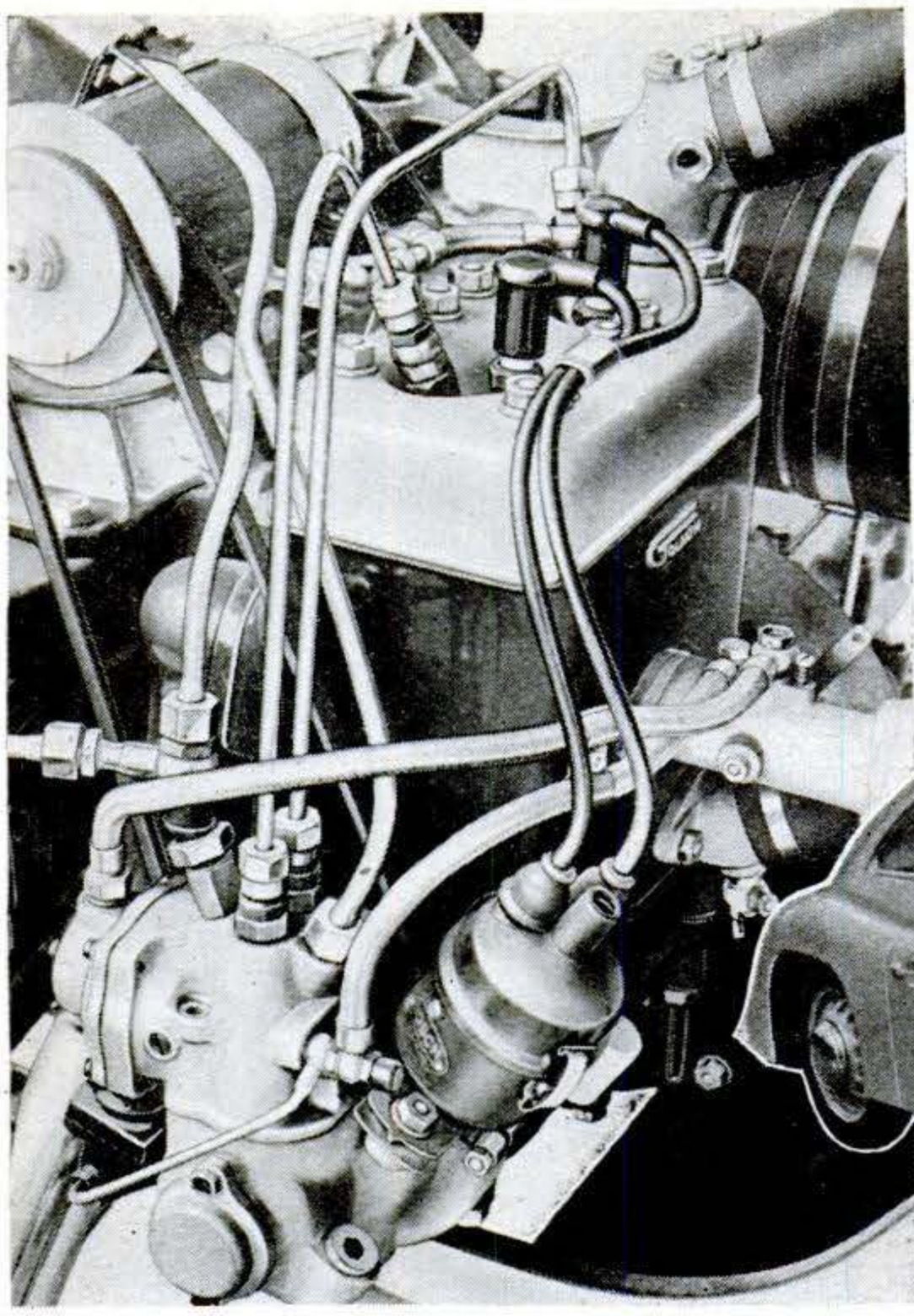


REVERSING LEVER is double-throw knife-type switch on left rear fender. Small voltage used prevents shock. Motor is reversed by reversing polarity of fields.



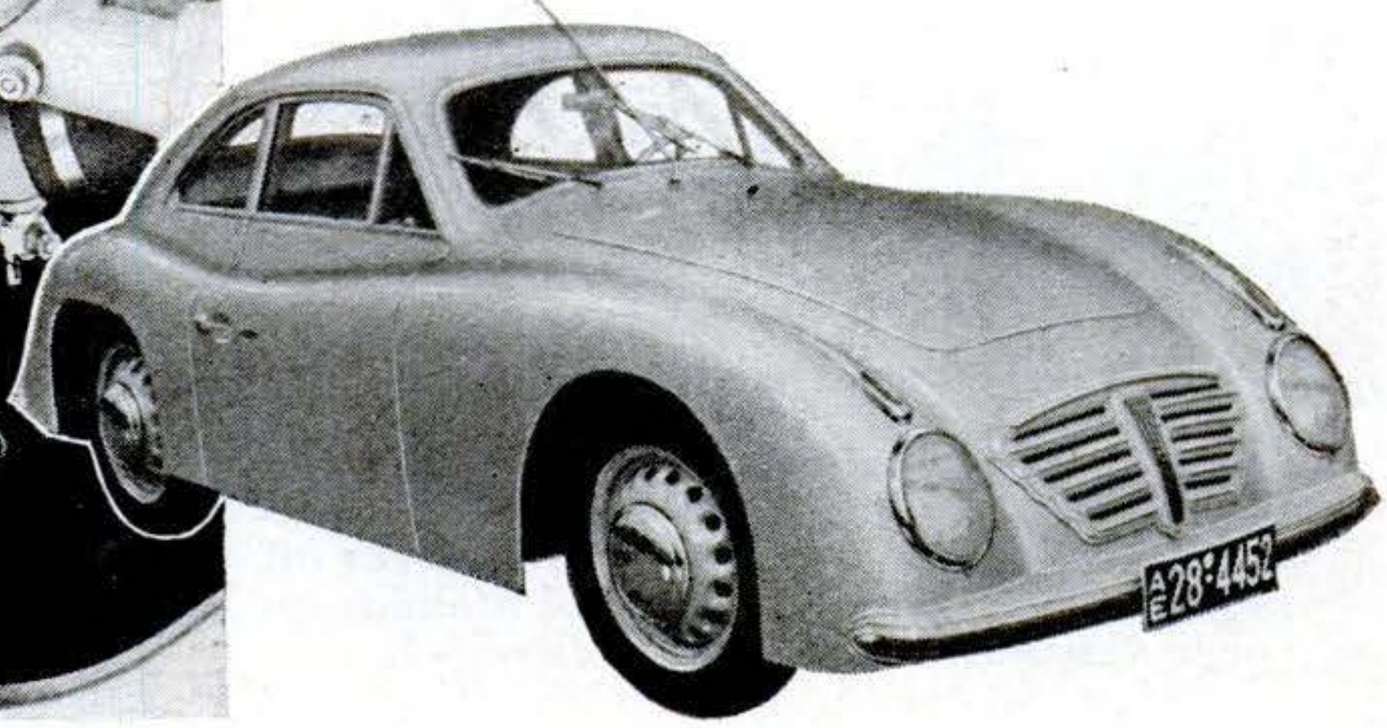
FOOT SWITCH, a standard auto-starter push button, supplies contact between battery and motor to drive car. Car or tractor will run three to six hours, can be recharged overnight.

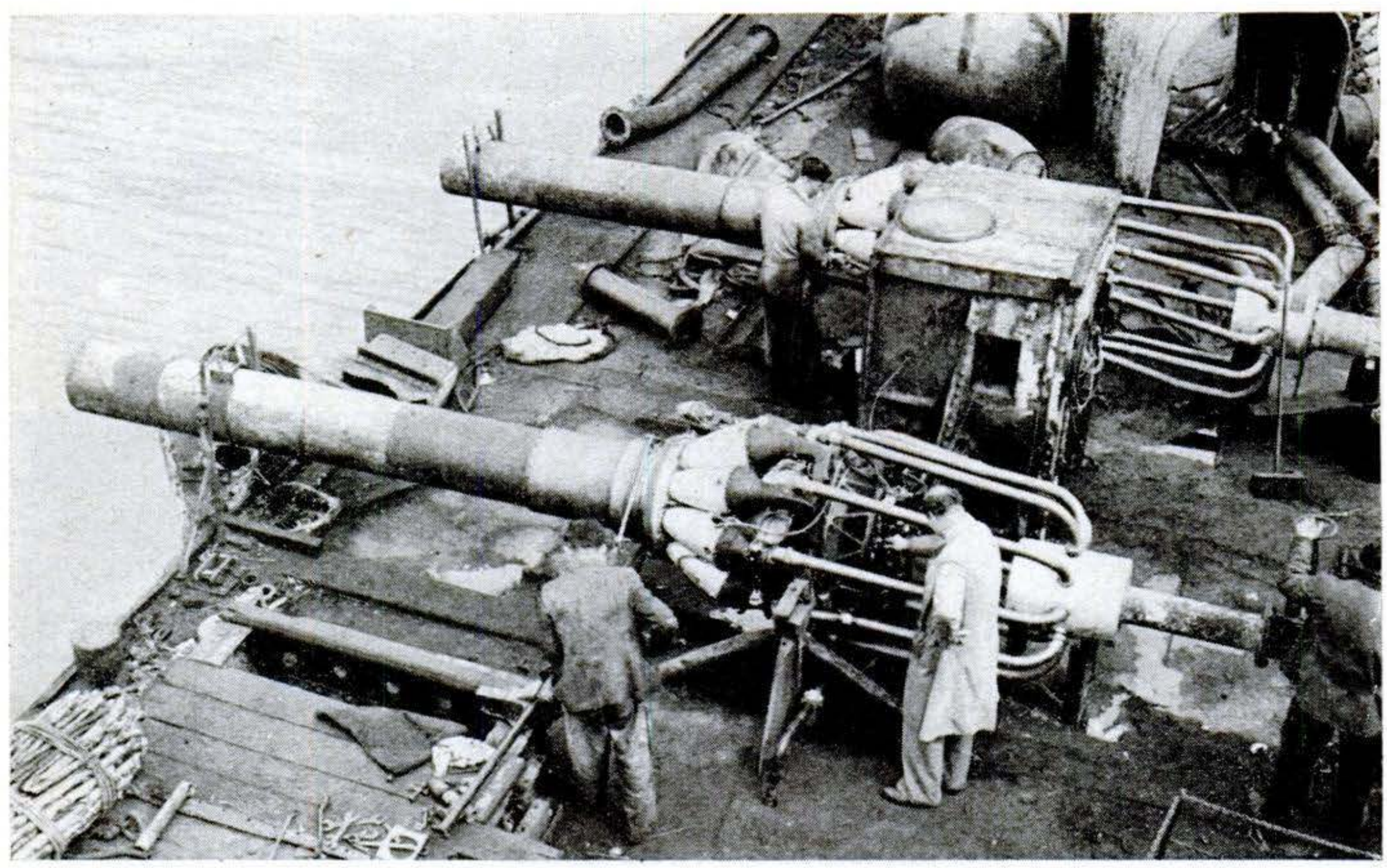
Copyrighted material



Fuel Injection Hops Up Car

FUEL injection gives the German Goliath below more speed and power even when low-grade gasoline is used. The two-cylinder, two-cycle engine has a cam-driven, vacuum-governed pump that forces fuel to the injection nozzle. The model shown at left, a transition type, has a carburetor and spark plugs but these will be missing in future engines. Timing will be changed so that the heat of compression will ignite the mixture of fuel and oil. The Bosch Co. claims the system cuts gas and oil consumption.



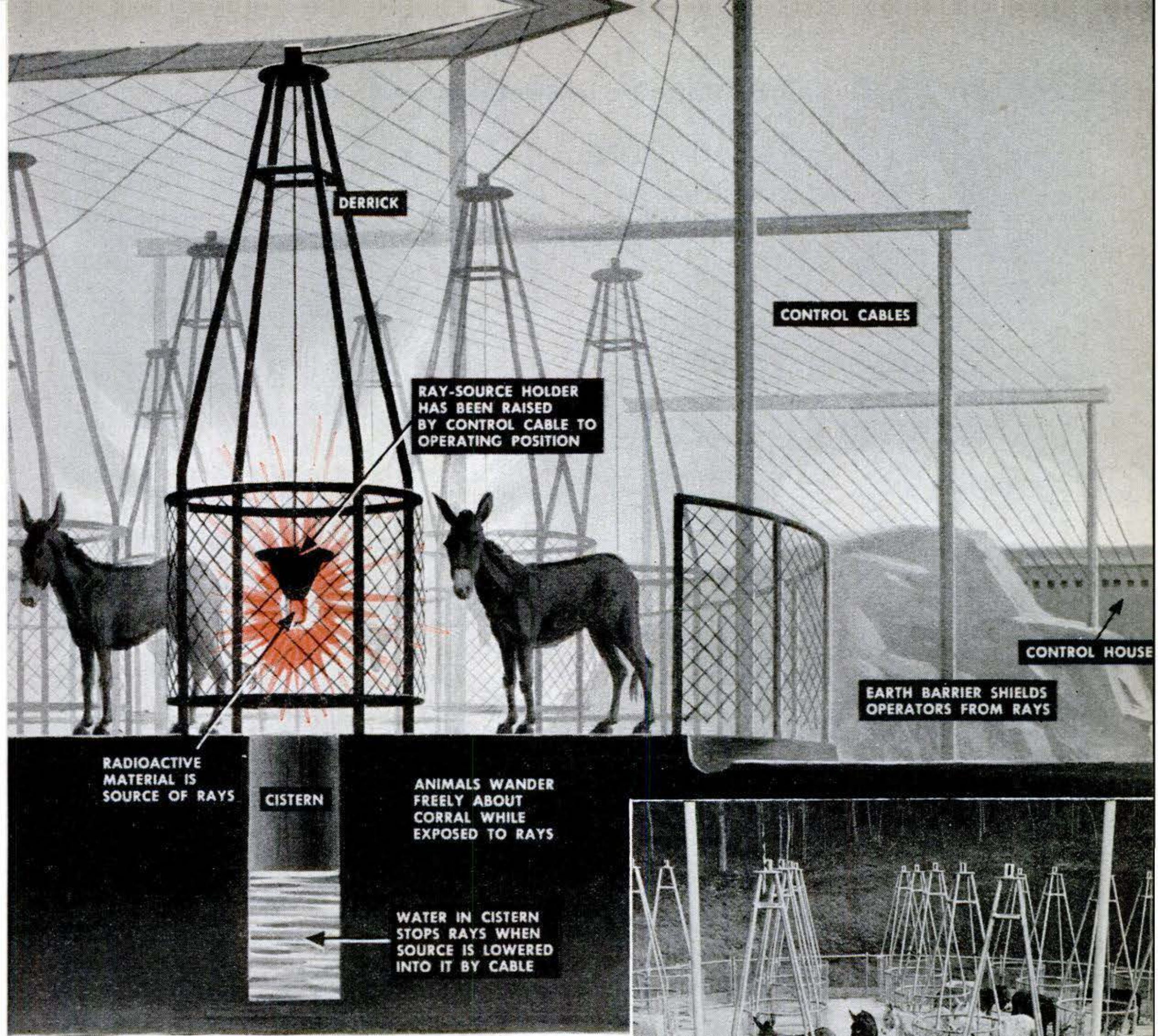


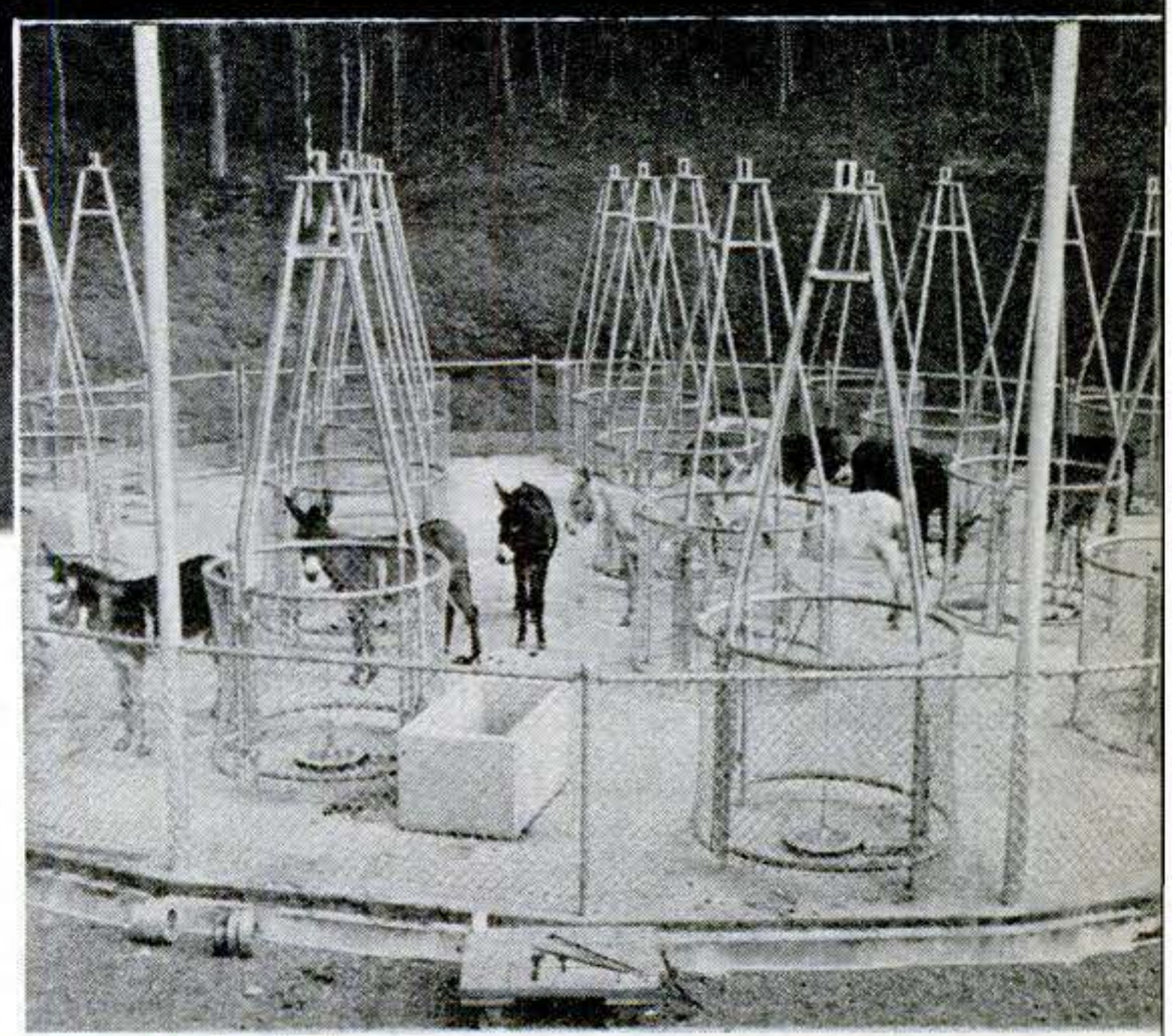
Jet Engines Raise Sunken Ship

FLOATING on a cushion of compressed air created by jet engines, the wrecked HMS *Warspite* recently was raised and moved 40 feet nearer shore. The ship had been on the bottom off Cornwall for two years.

The exhaust gases from two Derwent jets were directed into sealed compartments of the ship, floating her in two hours. The salvagers say that it would have taken a battery of gasoline-driven air compressors two days, working day and night, to do the job.

Copyrighted material





HOW CORRAL WORKS is shown in drawing. Burros test it in photo (from *Nucleonics*).

Livestock Exposed to Hot Atoms

DONKEYS, horses and cattle roaming a "radioactive corral" at Oak Ridge, Tenn., may help scientists learn how atomic rays affect human beings.

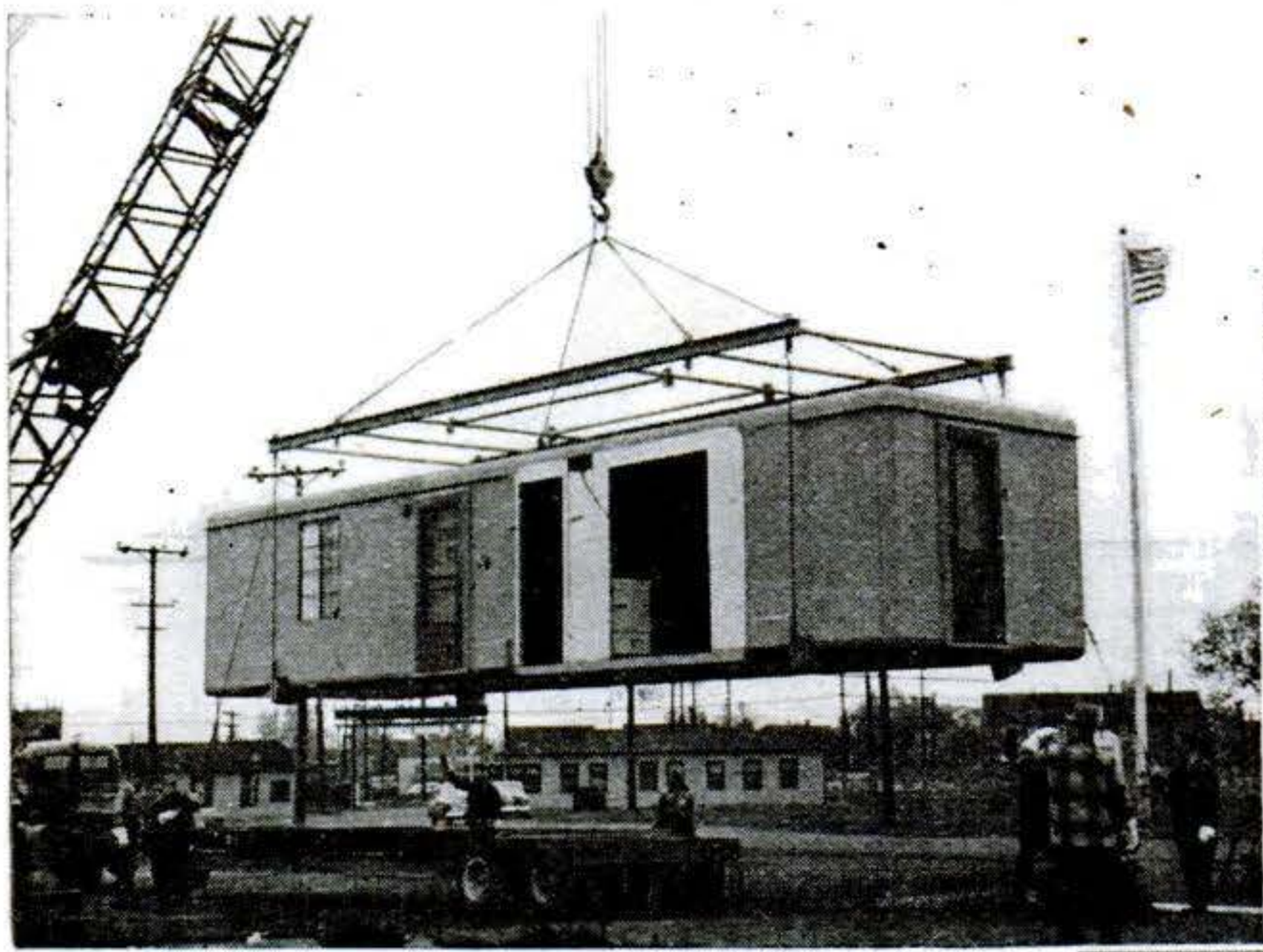
Small animals, like mice and dogs, have usually served for such tests before. More could be learned from larger animals, but how to expose them to precise doses of radiation has been more of a problem.

To solve it, the radioactive corral has a circular concrete floor 50 feet in diameter. Containers of radioactive tantalum 182 are kept safely shielded in 19 uniformly spaced water cisterns. After animals to be tested are led in, each ray source is hoisted into open air by a cable controlled from a nearby building shielded by an earth barrier.

In first trials, 10 Western burros at a time were placed in the corral with feed and water. Exposure meters worn by them showed they received reasonably uniform radiation, no matter where they wandered.

Copyrighted material

Portable House Can Be Shipped in Sections by Road or Rail

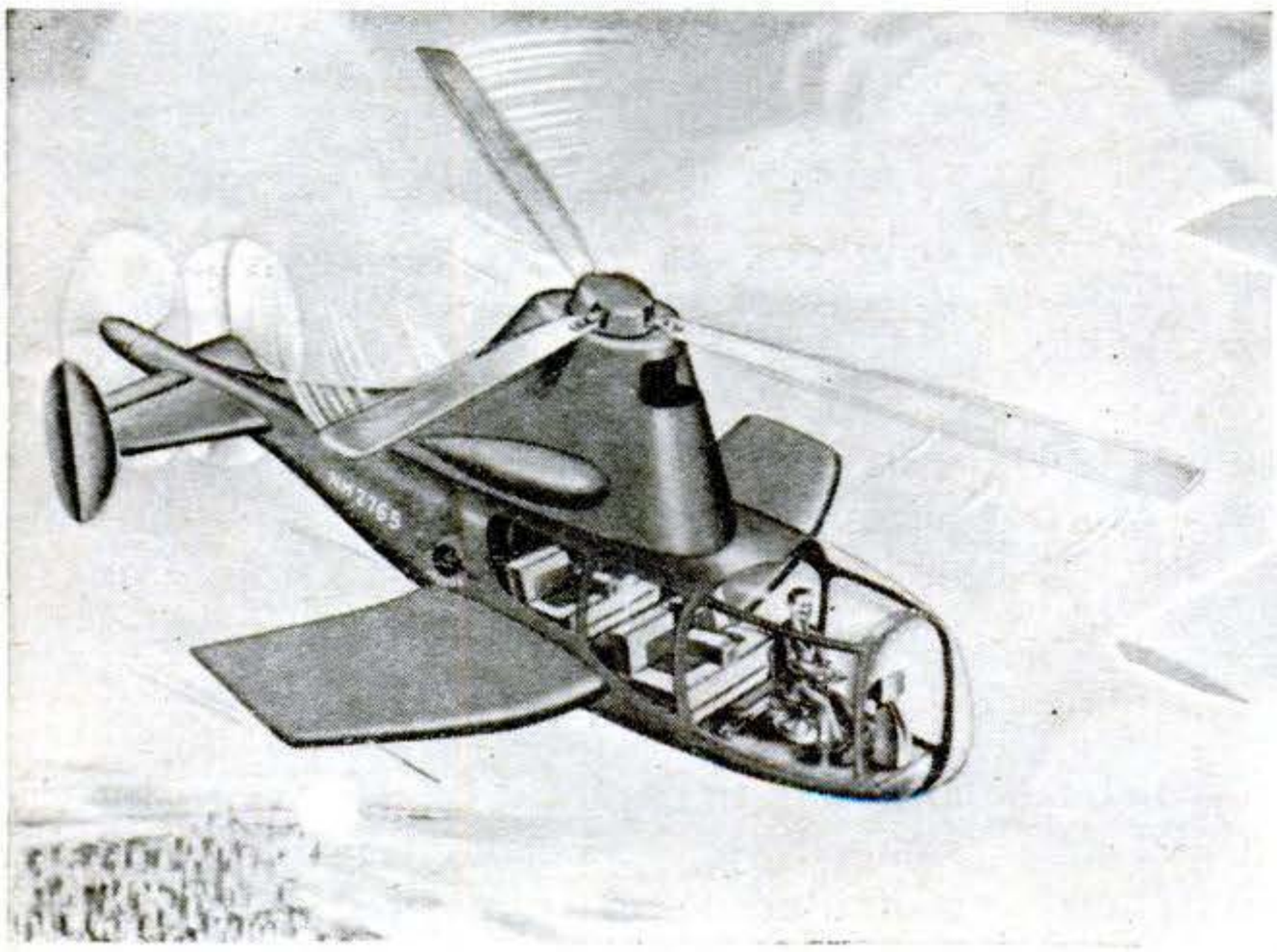


WORKMAN above tightens fittings between two of the units. The weatherproof, insulated walls are made of plywood laminations that are laid grain to grain and fused together.

You can take this five-room house right along with you when you move. It was stripped of furnishings, dismantled in three units, carted a mile on a trailer to a new site and re-erected again in one hour and 38 minutes. H-shaped when set up (right), it has one section with living room and dining room (above), another with two bedrooms. Kitchen, utility room and bath connect the wings. The Pressed Steel Car Co., Hegewisch, Ill., makes the Unishelter.

'Copter Borrows from Plane Design, Gets More Muscle

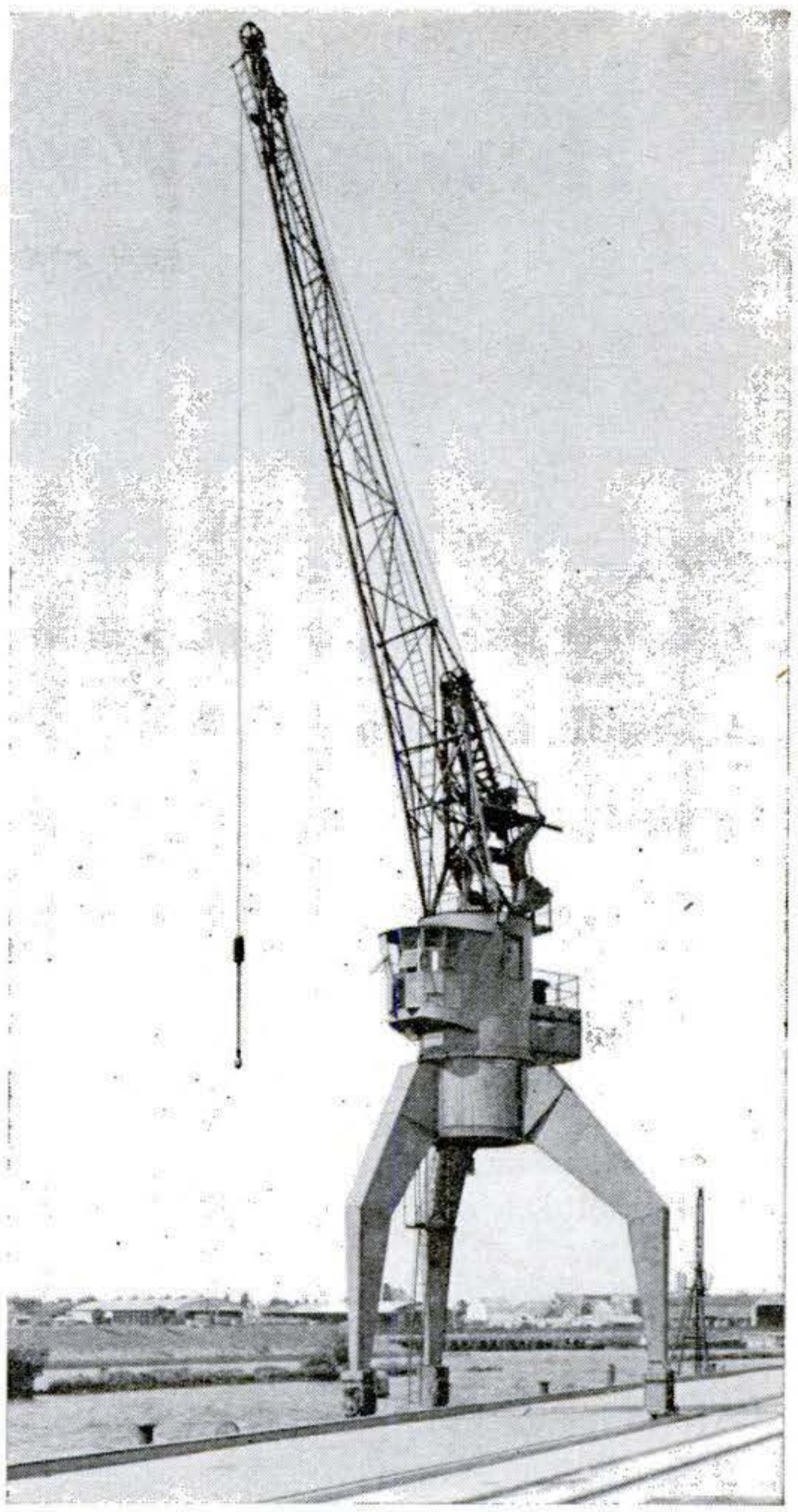
WHILE the rotors on this helicopter spin like crazy, the stubby wings lend added lift. Through a drive from the main rotor gear, its 350-horsepower engine powers not only an anti-torque rotor in the tail but also a prop that gives an added push. Now in the blueprint stage, the craft is expected to reach a top speed of 190 m.p.h., a cruising speed of 155. Transmission, controls, rotor unit and engine are a single package (right below). Jacobs Aircraft Engine Co., Pottstown, Pa., claims that its power unit is 20 percent per horsepower lighter than comparable installations.



Copyrighted material

Talking Tank Fights with Words

THE 300-watt loudspeaker mounted atop the turret of this Army tank is a weapon. During Army maneuvers this spring it was used to broadcast surrender invitations to a theoretical enemy and to disseminate accurate news to counteract untrue enemy propaganda. The tank talker is part of the equipment of an Army Loudspeaker and Leaflet Company. It is made by University Loudspeakers, Inc., White Plains, N.Y.



3-Legged Crane Saves Space

"GOLIATH'S tooth" is what dock workers call this unusual three-legged gantry crane, now at work in the harbor of Bremen, Germany. By using only one leg on the land side, the designers left room for trucks and workmen to move around when several of the cranes are side by side. The crane was built by the Demag Works of Duisburg.

White Paint Keeps Cabin Cool

THE white top seen on the DC-6 Mainliner below reduces cabin temperature as much as 15 degrees. A Mexican outfit gave United Air Lines the idea. Four years ago they added "sunbonnet tops" to their fleet to reflect off the hot sun south of the border. Now the line has adopted the new color scheme for all its airliners.

Copyrighted material

How They've Made

Hot Rods Safe

Choppers in Pomona, Calif., have helped slash city's traffic toll. Yet they have more races than ever—thanks to a hot-rodding cop.

By Andrew R. Boone

THE hot-rodders of Pomona, Calif., are largely responsible for a drop in Pomona's traffic death toll from 16 persons killed in 1949 to two in 1951.

If you're used to hearing of all kinds of accidents ascribed to hot shots, this news may lift your eyebrows. Yet the plain truth is that in Pomona (population 45,000), the boys in the souped-up jalopies have helped cut the auto death toll by seven-eighths.

And the Pomona hot-rodders have done all this without giving up either speed or the opportunity to win drags (the hot-rod word for races) and other contests—two big reasons for being a hot-rodder in the first place.

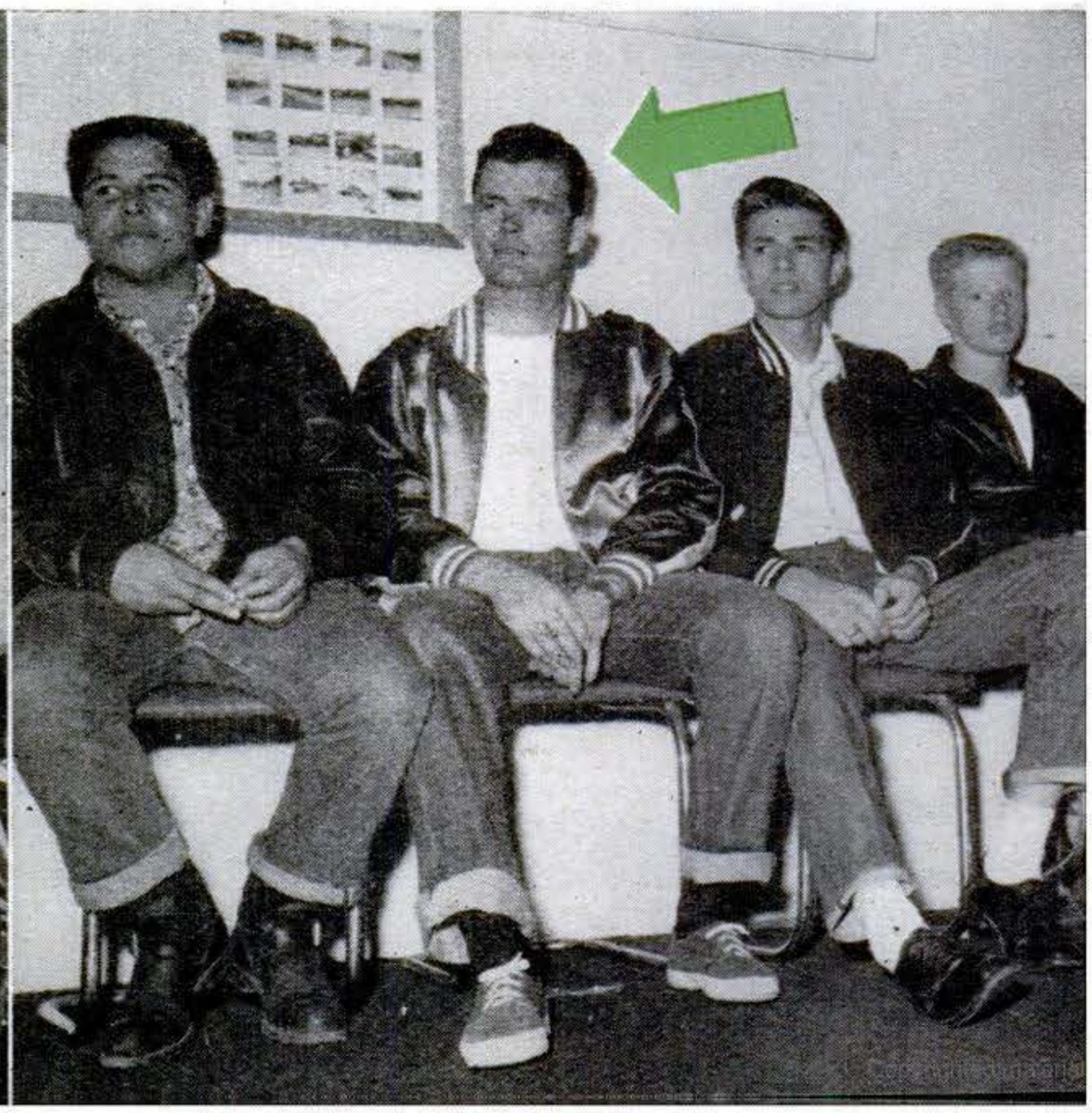
Three years ago, Pomona's traffic fatalities—like those of so many U. S. cities today—were leaping. So were hot-rod drivers, leaping all over the city streets, leaping out at pedestrians at dark corners at night. The hot-rodders were not, of course, responsible for the whole death toll. But they were involved in accidents, some fatal. They got a lot of blame.

Motorcycle police repeatedly broke up the hot-rodders' drags along Pomona streets. More than once, judges helped the cops make wholesale arrests. California was alarmed and the state legislature passed laws against the hot shots.

Pomona's hot-rodders reacted. They greeted cops with boos and catcalls, moved sullenly, and, when a race was broken up by cops, would congregate on another dark

CHOPPERS, 56 strong, meet weekly in basement clubhouse at Pomona police station. President Jerry Henderson conducts business session. The boys tolerate no lawbreakers.

POLICE SERGEANT BUD COONS (arrow) takes part in activities of Choppers, of which he is honorary member, wears their club jacket. He's led hot-rodders in cutting traffic deaths.



DRAG RACE STARTS as two roadsters are waved off on black-top track at Los Angeles County Fair Grounds. Cars are timed as they dash between electric eyes at end of quarter-mile.

INSPECTION of '29 Ford roadster is carried out jointly by Sgt. Coons and California State Motor Officer Chuck Pollard. Unless car is safe on highway, it can't run on drag strip. California law requires headlights, license and rear-view mirror. This car passed. Choppers themselves inspect cars once a month, check brakes and steering gear before runs.

Copyrighted material

'Poker on Wheels' Teaches Safe Driving

COURSE FOR POKER RUN is marked for contestants by Calvin Turpin, who drops paper bags full of lime at intervals along road. Contest involves finding playing cards in sealed envelopes hidden along the course. Highest five-card poker hand at end wins. Players must not swap cards.

street somewhere and set up another race.

Ralph Parker, the city's police chief, handed this headache to a young officer, E. J. (Bud) Coons, now 28 and a sergeant. Parker's instructions sounded strange indeed from a police chief:

"If you can't control 'em," he said to Coons, "join 'em. Then we'll see what happens."

Coons, in uniform, spoke to a meeting of a hot-rod club called the Choppers. His reception was cool. Coons wasn't controlling 'em.

Coons, out of uniform and in a T shirt and blue jeans, went to a later meeting and astonished the Choppers with a speech as unorthodox as had been his own instructions from Chief Parker.

He Made It

"Listen," he said. "I'm a cop. But I'm a hot-rodder, too. We're not trying to throw the book at you guys. I want to join you. Together we can save lives, run fast on Sundays, have some fun in get-togethers."

To join the Choppers, you have to be

Safety Tips from the Pomona Choppers

MAKE *sure body is well fastened to frame. Tighten all bolts. Make door latches secure.*

If you alter or hand-make a new body, install plenty of inside bracing. That's for protection in case of roll-over. Chrome-moly tubing is best—it's tough and light.

Inspect steering knuckles for any slack. Kingpins are the main feature. Replace the mechanism if it's worn.

Use aircraft-type tubular shocks. They're available at parts stores in kits, complete with brackets.

Hydraulic brakes are a must. All newer cars have them, but they'll have to be installed on all models of earlier vintage than '35.

Use tires of a good grade, for your life depends upon your rubber. Get racing types for high-speed runs. No recaps, please.

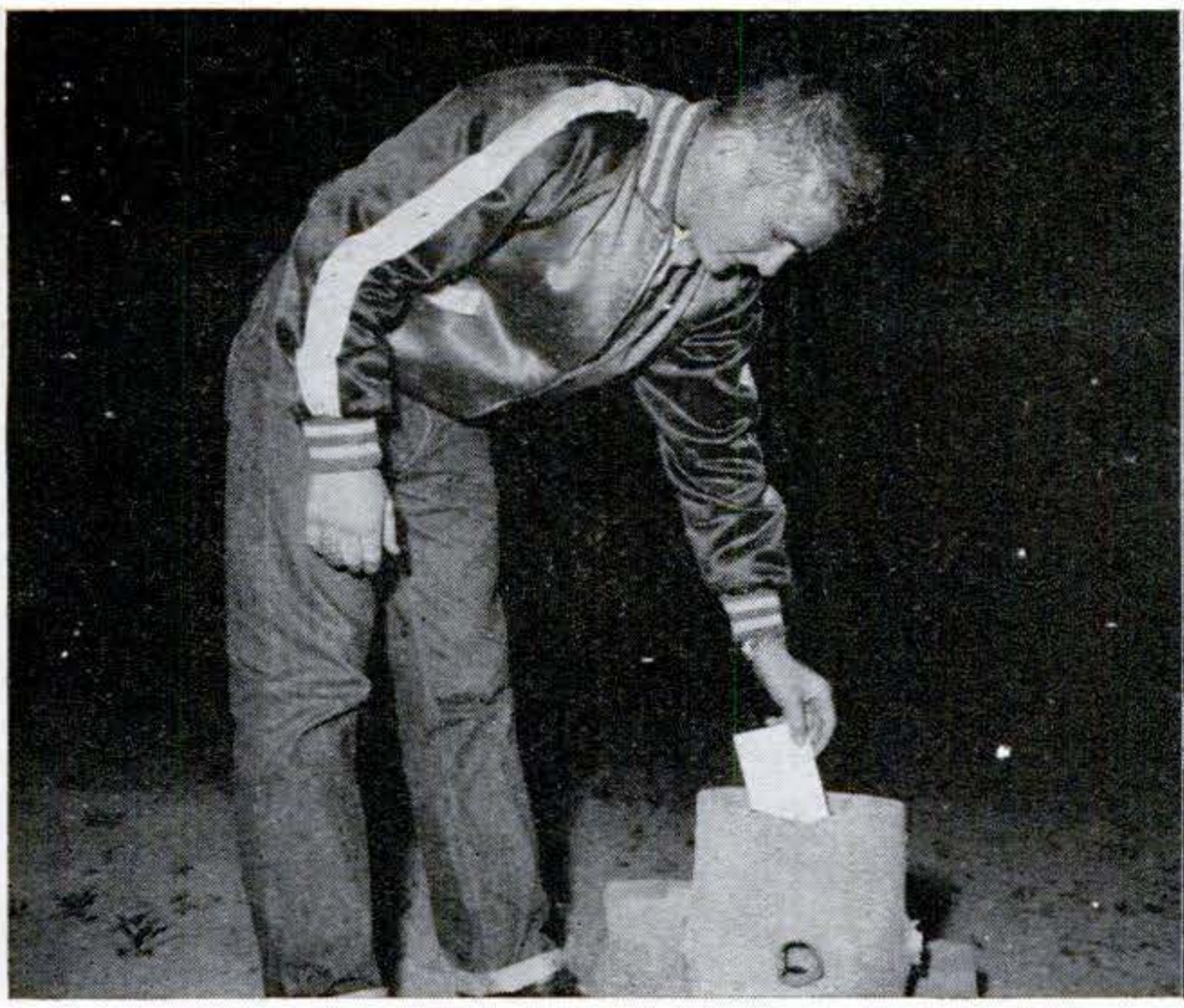
Check the hubs, and make sure they're properly installed and secure.

Keylock all nuts where possible. Be certain no threads are even partly stripped.

Wear safety belt and crash helmet in all contests.

Stay under legal speed limits. Your car may be safe at 100 miles an hour, but only on a supervised and patrolled course.

Copyrighted material



CONTESTANT TOM GORMAN draws a card from a can hidden in a standpipe in a walnut orchard. Lime circle on highway warned him of card cache within 30 feet of road.

SERGEANT COONS is the final arbiter. He opens the sealed envelopes and announces the value of each poker hand. Winner gets jack pot made up of contributions from contestants.

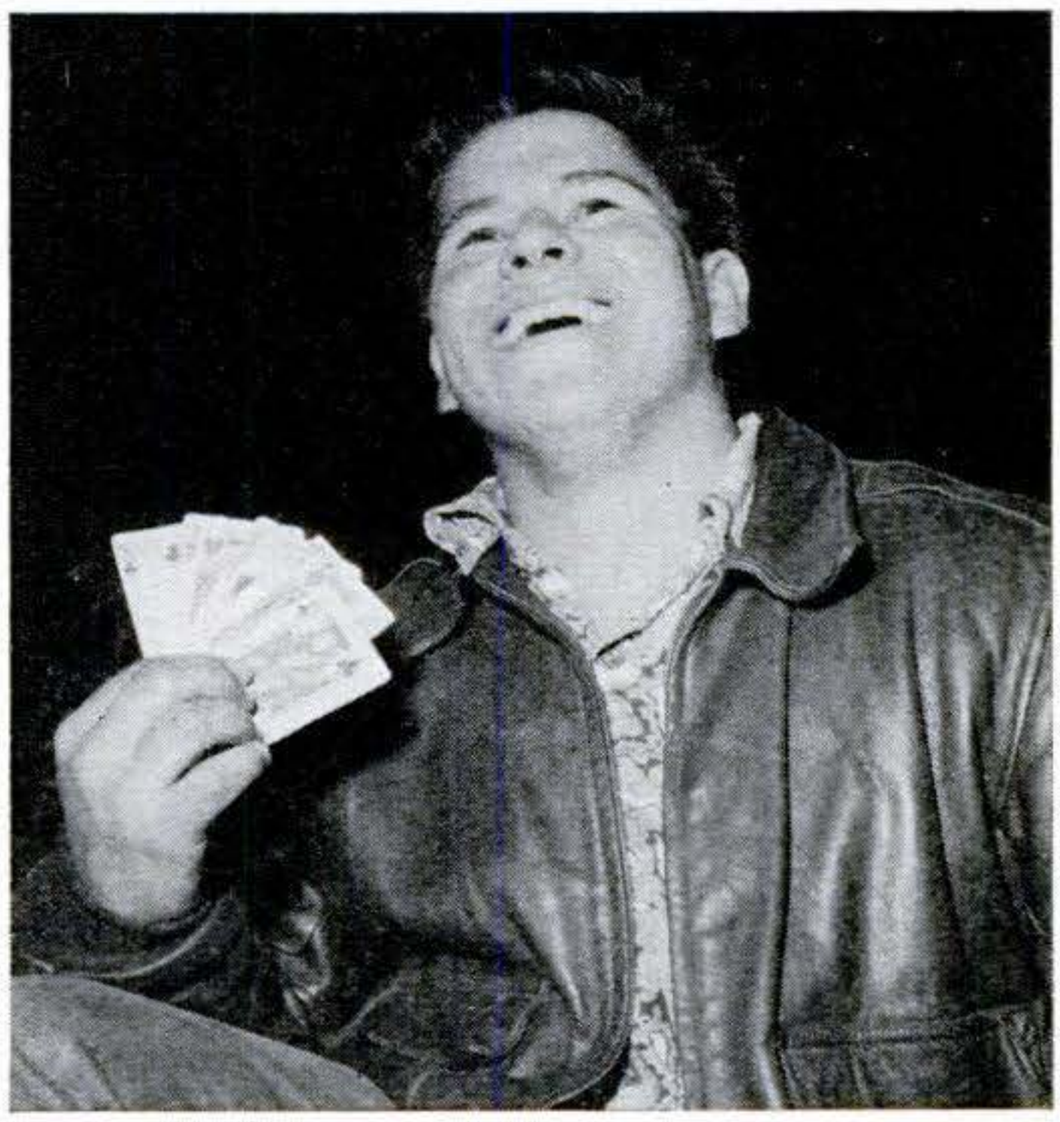
voted in. Members drop marbles in a cigar box to vote. Three black marbles keep you out. Coons was elected an honorary member. He had joined 'em.

He offered to Choppers a program designed both to give them more than ever from hot rodding and to help cut Pomona's traffic toll. It took a while to get everything into effect. But the program included:

• ***Races each Sunday*** on the paved parking area of the Los Angeles County Fair Grounds. It cost the city $5,378 to add a quarter-mile black top for racing, with the hot-rodders to pay back the money from entry fees and admissions. Today, as many as 165 hot-rodders bring their cars each Sunday for time trials and races on the black-top strip. Thousands of spectators are attracted. They see plenty: a modified roadster recently did 127.32 miles an hour on the strip. The loan is being paid off on schedule.

• ***Insurance at the meets.*** "We carry $300,000 in public liability and $50,000 in property-damage insurance," Bud Coons explains. Nobody is in danger financially. Nor are life and limbs risked the way they were in the old days. Every car gets a thorough going-over once a month. Brakes and steering gear are checked before every run.

• ***Timed runs,*** a kind of economy drive in miniature. It takes driving skill to win one of these. Using public roads and highways,



WINNER OF POKER RUN, Johnny Vierya, drew three jacks and a wild joker to win the $6 pot with four of a kind. The run ends with a hot-dog feed.

hot-rodders take off at five-second intervals to compete for the best time within strict speed restrictions over a selected route. The route is marked on a road map given each driver. The speed restrictions: All cars must keep down to 17 m.p.h. in a 25-mile zone, to 23 in a 35-mile zone, and so on. Checkers record times. Too fast or too slow loses the race.

• ***An achievement plaque.*** The winner

Copyrighted material

is determined by a point total. The boy who attends a timed run or other event gets one point. The winner gets extra points. The boy who manages a run gets five points. But any rabbit who gets a ticket for speeding or running a stop sign or another traffic violation is docked 10 points, and besides he has to stand up in a meeting of the Choppers and confess. The plaque holder keeps it for six months. There is a similar award for the best hot-rodder each month.

• ***Poker runs,*** or hunts for the best poker hand. The winner depends on pure luck. In this one, a driver follows splashes of lime on the pavement till he comes to a lime circle on the road. Then he knows there's a can of playing cards, each card in a sealed envelope, within 30 feet. The driver picks up an envelope, continues till he has made five stops. At the end of the run, all drivers gather, envelopes are opened, and the man with the best poker hand wins. No double parking at stops is permitted. Speed has nothing whatever to do with deciding the winner.

Joining the Choppers worked for Bud Coons, as Chief Parker hoped it would. By the fall of 1952, summonses given to Choppers had dwindled to fewer than six a year.

One boy, who formerly was hauled in regularly by Coons for loud pipes, speeding or circling on screaming tires, had not had a ticket in two years.

The energies of the Choppers and other hot-shot groups were going into programs like Coons's. Such programs included more opportunities to win, more chances to display driving skill, more fun, and more chances for speed records on Sunday than hot-rodders had ever had before.

Speed with Safety

And as the traffic death toll plummeted, the Pomona Lions Club gave the Choppers a trophy in appreciation of their work.

"Don't get them wrong," Bud Coons says today. "They're still hot-rodders. I'm just as much of a hot shot as these guys. We've just learned to control ourselves on the streets and take our speed on the strips where the public won't get hurt."

POINT WINNER in club activities, Manuel Vallejo receives trophy for third six-month period in a row.

Probably one reason Coons is so effective in teaching safety is that he has a personal interest. He has a jagged scar on his forehead. "Got that," he tells you, "on a cycle."

As the Choppers' program thrived, the club grew so large it could no longer meet in members' homes. How radically things in Pomona had changed was shown then. The Choppers, who in 1949 booed a cop on sight, selected as their permanent meeting place the basement of the Pomona police station. END

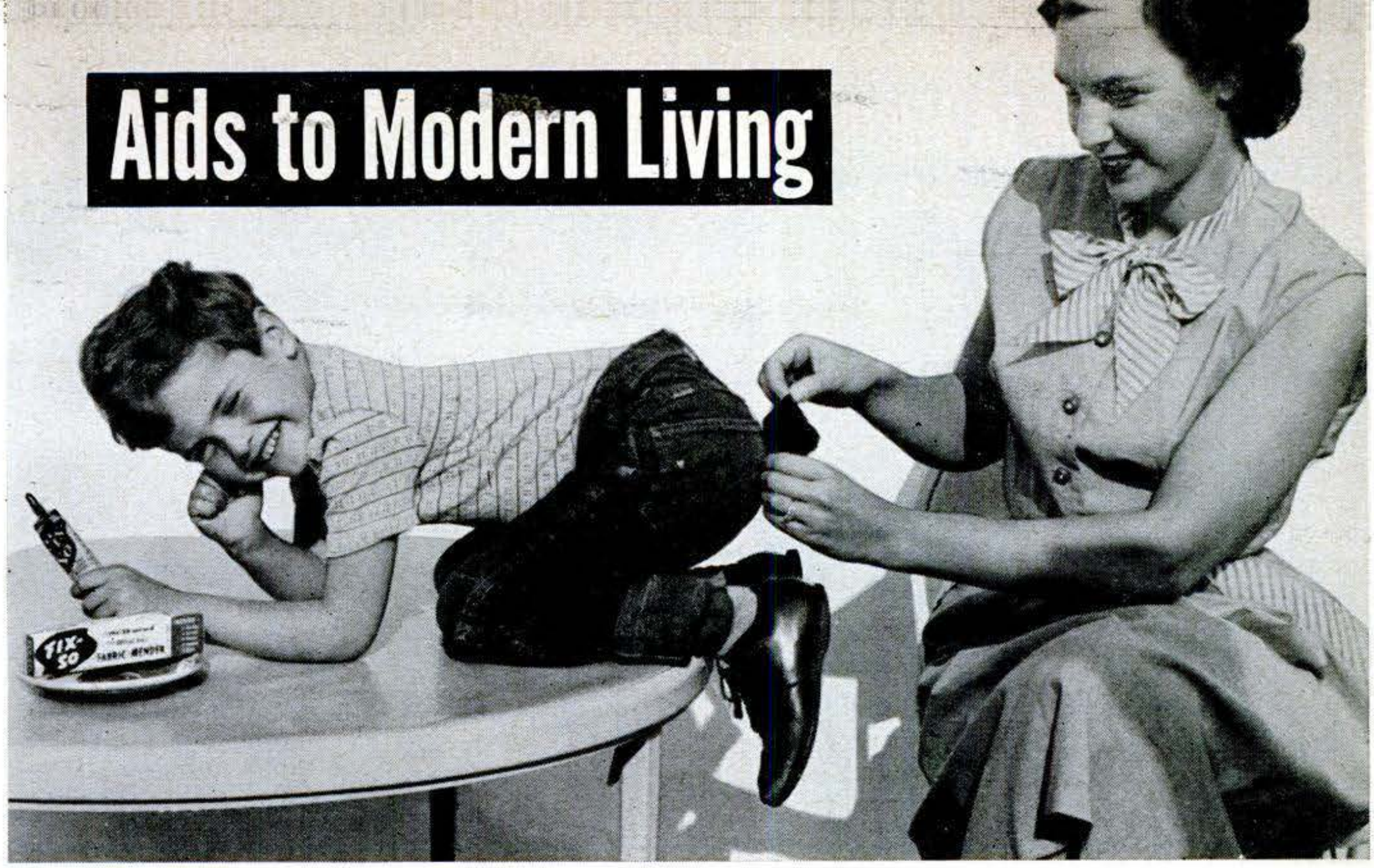
Next Month: PSM will give you the low-down on special tires for winter driving.

Rough Treatment Roughens Slick Roads, Prevents Skidding

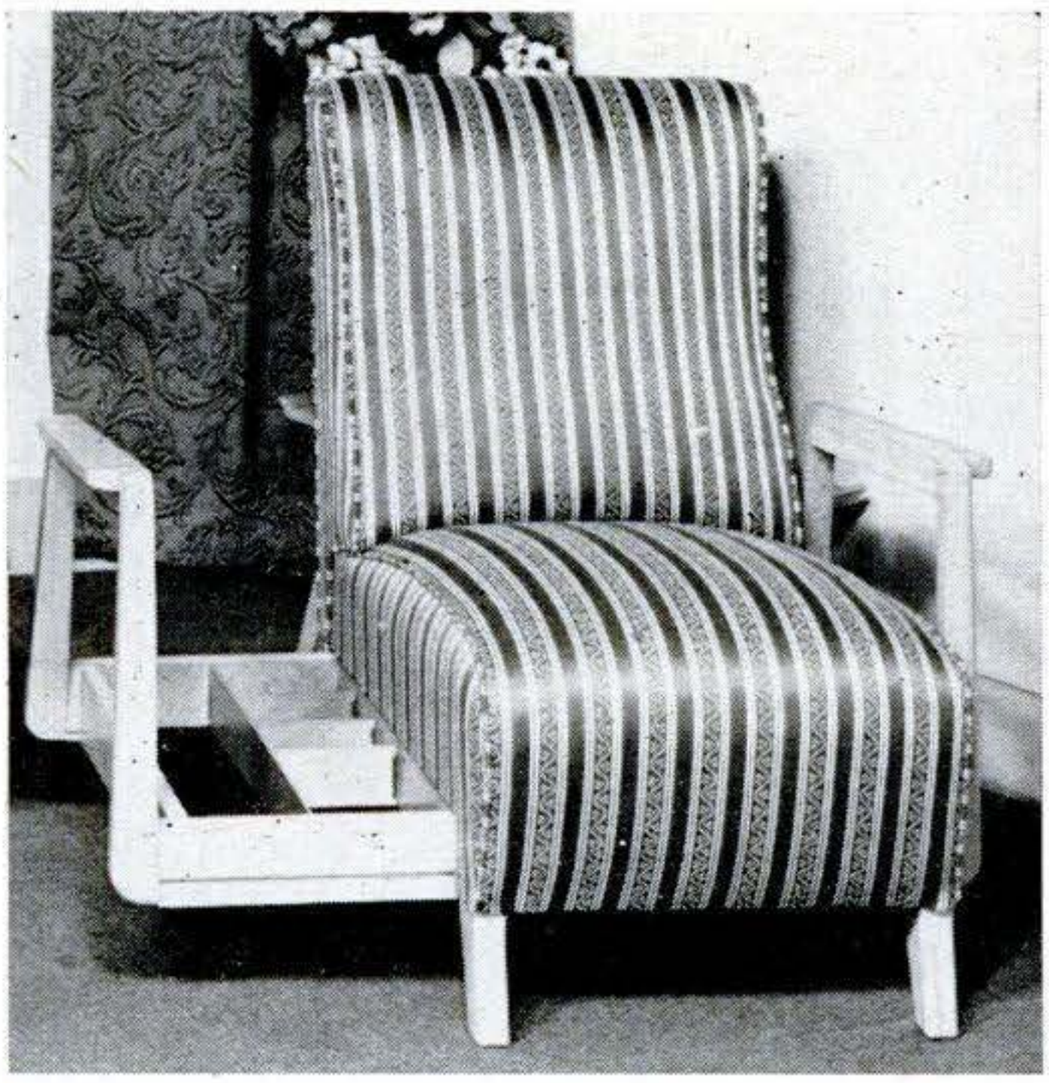
THE highway department itself is burning up the roads in California. Its engineers found that heating and scratching black-top pavement roughened the slick surface enough to reduce skidding considerably. The rig (below) consists of a weed burner, which softens the road, followed by a rake-type drag, to cut skid-preventing grooves.

yrighted material

Aids to Modern Living



1. Mending Fluid. A stitch in time may save nine but a dab of this stickum on the back of a patch saves all the stitching. Patches are just patted into place and the mending basket is emptied fast. Fix-so will darn socks, patch jeans, mend sheets, turn up hems and put in zippers. Washing, ironing, even boiling won't dislodge patches.



2. Sewing Chair. One arm of this chair slides out, disclosing a tray to keep sewing tools handy. Compartments are provided for spools of thread, needles and scissors.

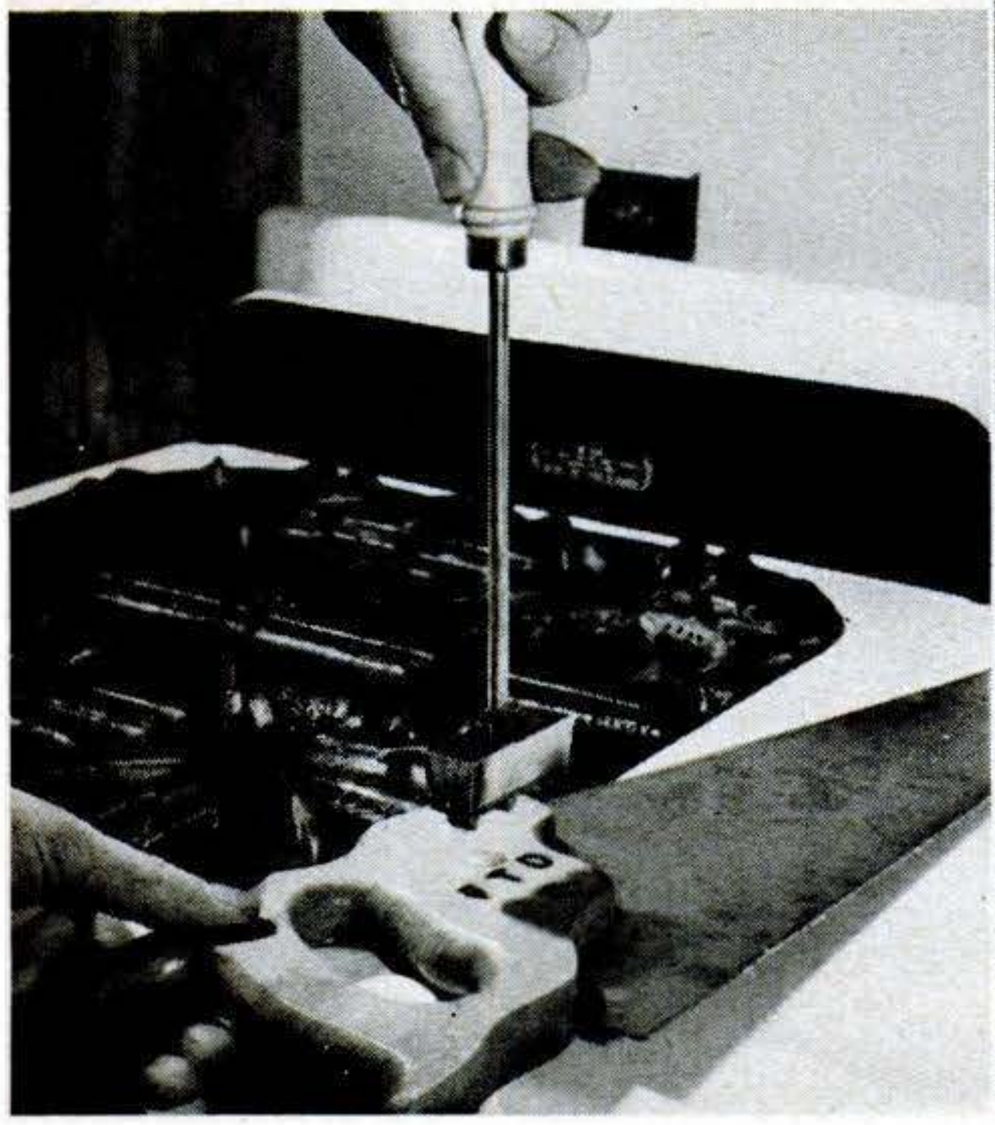
3. Clothes Drier. A room never gets steamy when this Frigidaire drier is in operation. It has a filter that condenses moist air and traps lint. Moisture drains into tray.

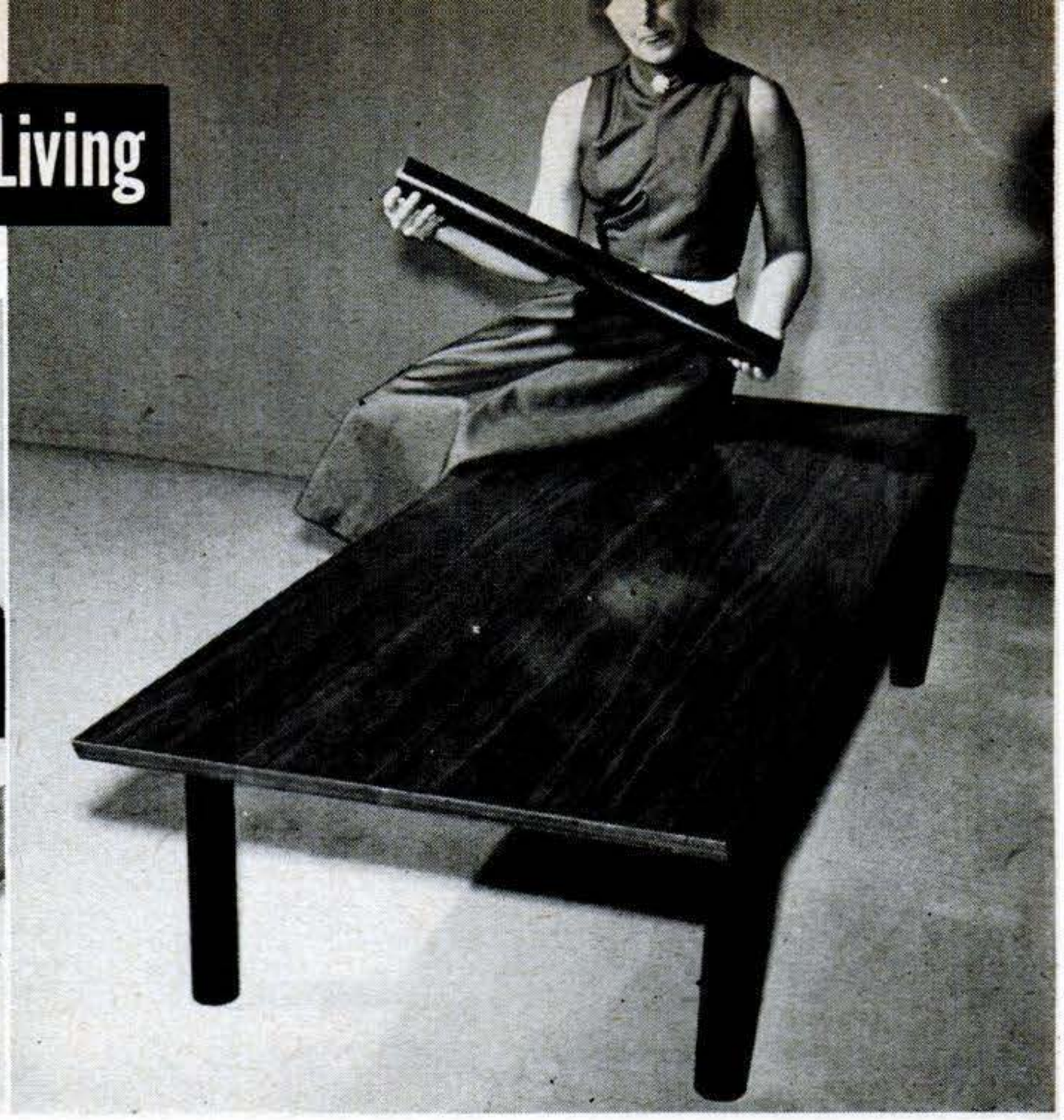
Further information on these products can be obtained from: 1. Cossman & Co., 6612 Sunset Blvd., Hollywood 28; 2. Greaves & Thomas, c/o Matthew Crosse News and Features Service, 18A St. James Place, London SW1, England; 3. Frigidaire Division, General Motors Corp., Dayton 1.

Please turn the page for more aids to modern living.

Copyrighted material

MORE Aids to Modern Living





4. Branding Iron. Burn your initials on shop and garden tools—just like a rancher brands cattle—and they'll be easier to round up. This iron heats over any open flame, works on plastics and leather as well as on wood.

5. Dual-Use Table. Two sets of threaded legs come with this table, doubling its usefulness. Replacing the short legs of the 17-inch-high coffee table with longer legs forms a dining table that is 28 inches from the floor. Edward Wormley of New York is the designer.

8. Ear Pad. This doughnut of foam rubber will ease ear pressure for workers who use the telephone a lot, and it will block out noise at the same time. Adhesive on one side holds it firmly on the earpiece. The pad can be removed for washing.

9. Casserole. Campers have been cooking with canned heat for years. Now fancied-up casserole dishes simmer and bubble over the same fuel on the dining table. With this one, any camper can whip up a supper in jig time when the cook is away.

10. Glass-Block Vent. Half a glass block framed in aluminum makes this ventilator. A handle indoors opens and closes the Panel-Vent. When closed, the block fits against a weathertight gasket. When open, an inside screen keeps insects out.

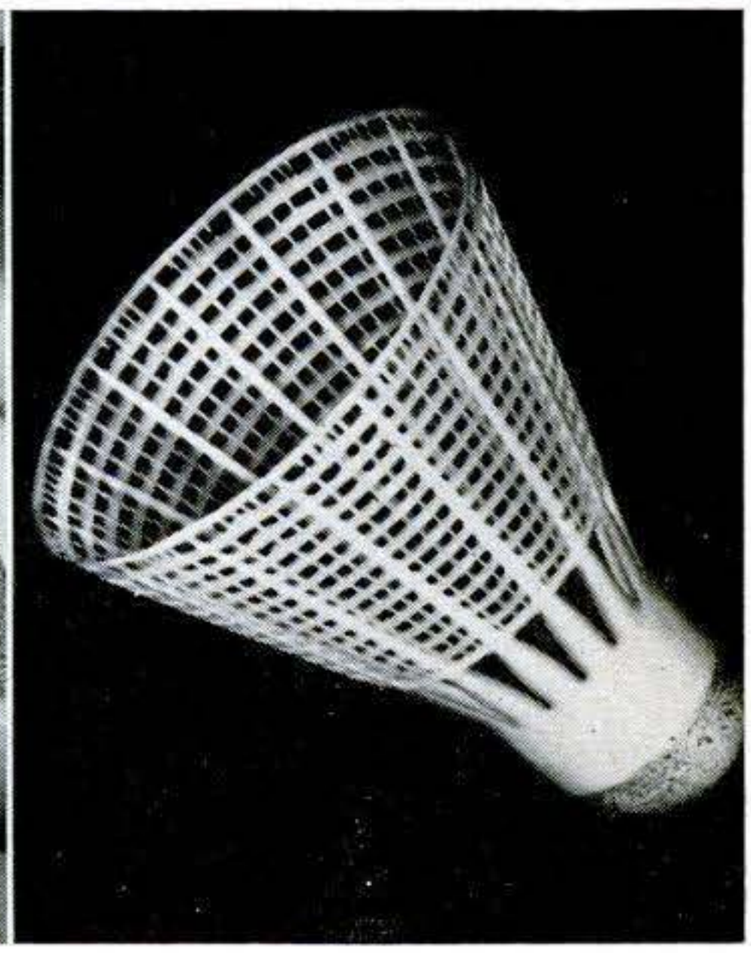
Copyrighted material

6. Baby Bath. This inflatable plastic tub leads many lives. It's a crib when visiting, a car bed when motoring and serves as a wading pool or beach float as the child grows. Deflated, it fits in a drawer between baths, packs in a suitcase for travel.

7. Glass Door. This patterned door lets in light but assures privacy. The ⅜-inch-thick glass slab is heat-treated to make it stronger than ordinary glass of the same thickness. Its ball-bearing hinges, lock and knobs are bronze-finished.

11. Cut-Quick Tape. You don't need scissors to snip a bit of adhesive tape from this roll. The lid of the box has a serrated edge to do the cutting for you.

12. Removable Zipper. If this zipper sticks, push back on the pull tab to open its jaws and lift it off the track. Reclamped on the track, the lock slides freely again.



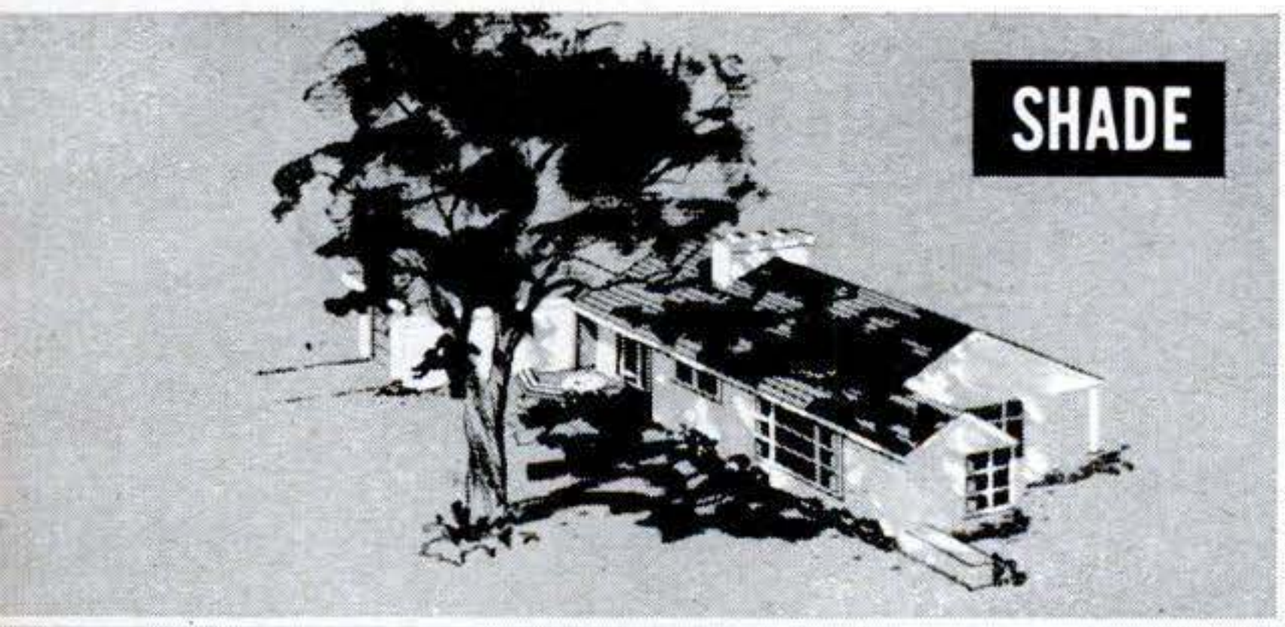
13. Plastic Bird. This latticework shuttle is light enough for official badminton but husky enough, the maker says, to outlast four of the feathered kind.

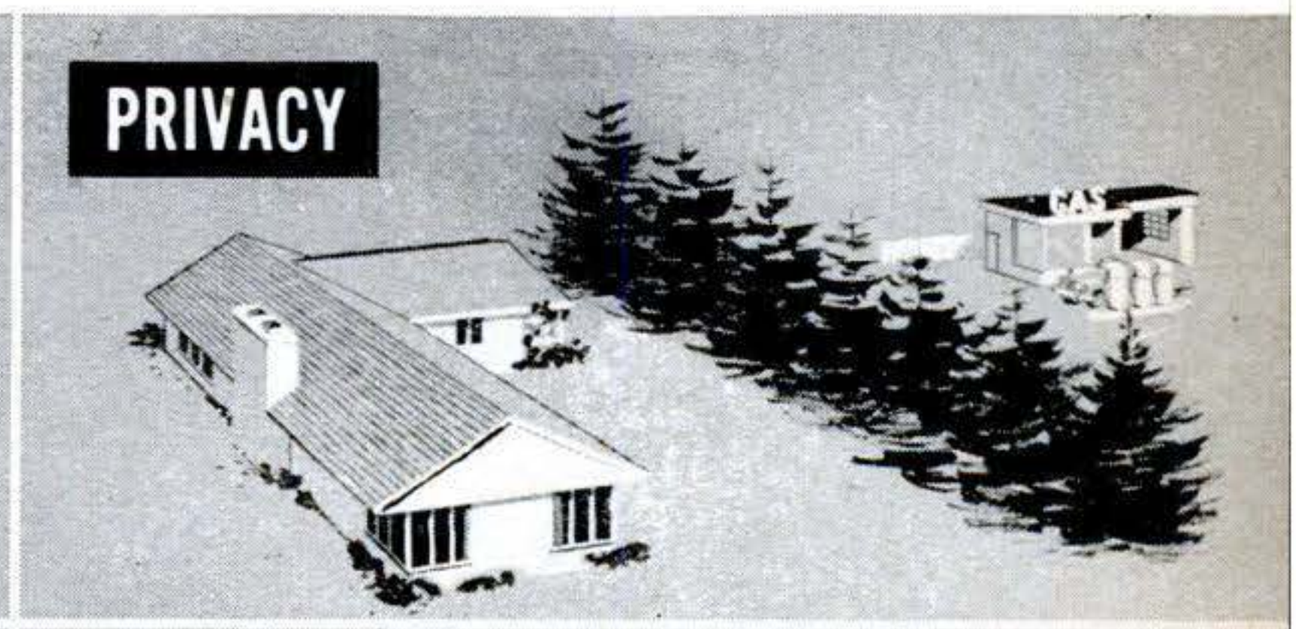
Further information on these products can be obtained from: 4. Hammacher Schlemmer & Co., NYC; 5. Dunbar Furniture Co., Berne, Ind.; 6. Guarantee Products Co., South Bend, Ind.; 7. Libbey-Owens-Ford Glass Co., Toledo 3; 8. Gerrard Industries, 63 Gerrard St., West, Toronto, Ont.; 9. The Krebs, Westerly, R.I.; 10. Kimble Glass Co., Toledo 1; 11. Johnson & Johnson, New Brunswick, N.J.; 12. Snag-Pruf Zipper Corp., 2 Park Ave., NYC; 13. Alex Taylor & Co., 22 East 42nd St., NYC.

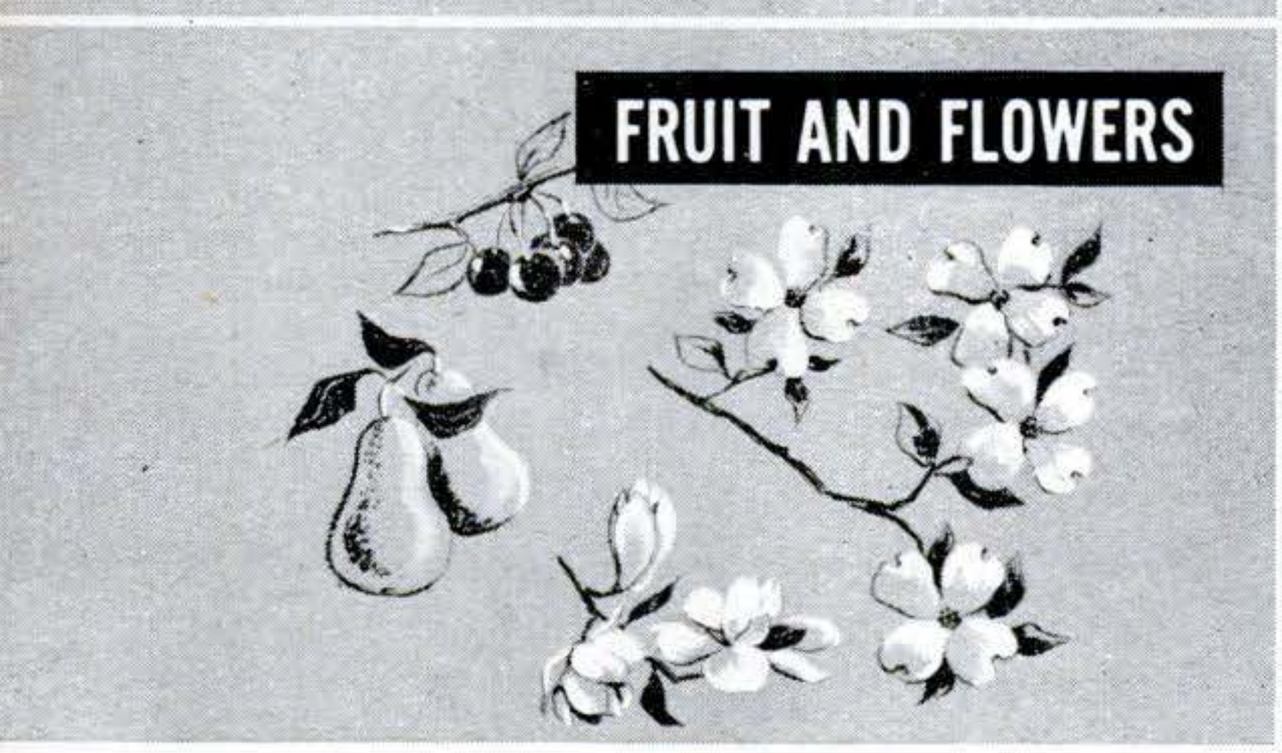
Copyrighted material

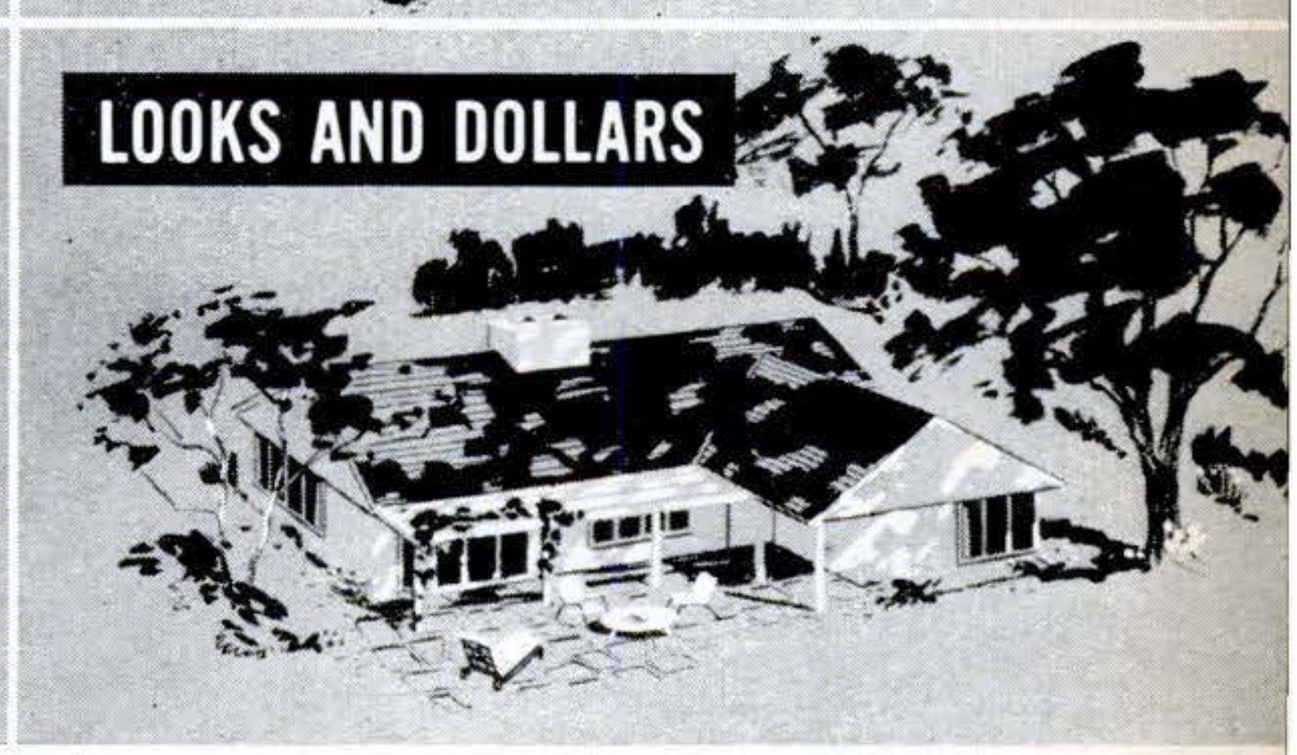
Copyrighted material

How Trees Can Make a House More Valuable









Plan your planting now—while it's easy to foresee the results. Then, when leaves are down, you can put in the trees you need.

By Hartley E. Howe

THIS is the life, you think. No more landlords, no more rent, no more noisy neighbors upstairs—you're an independent homeowner now.

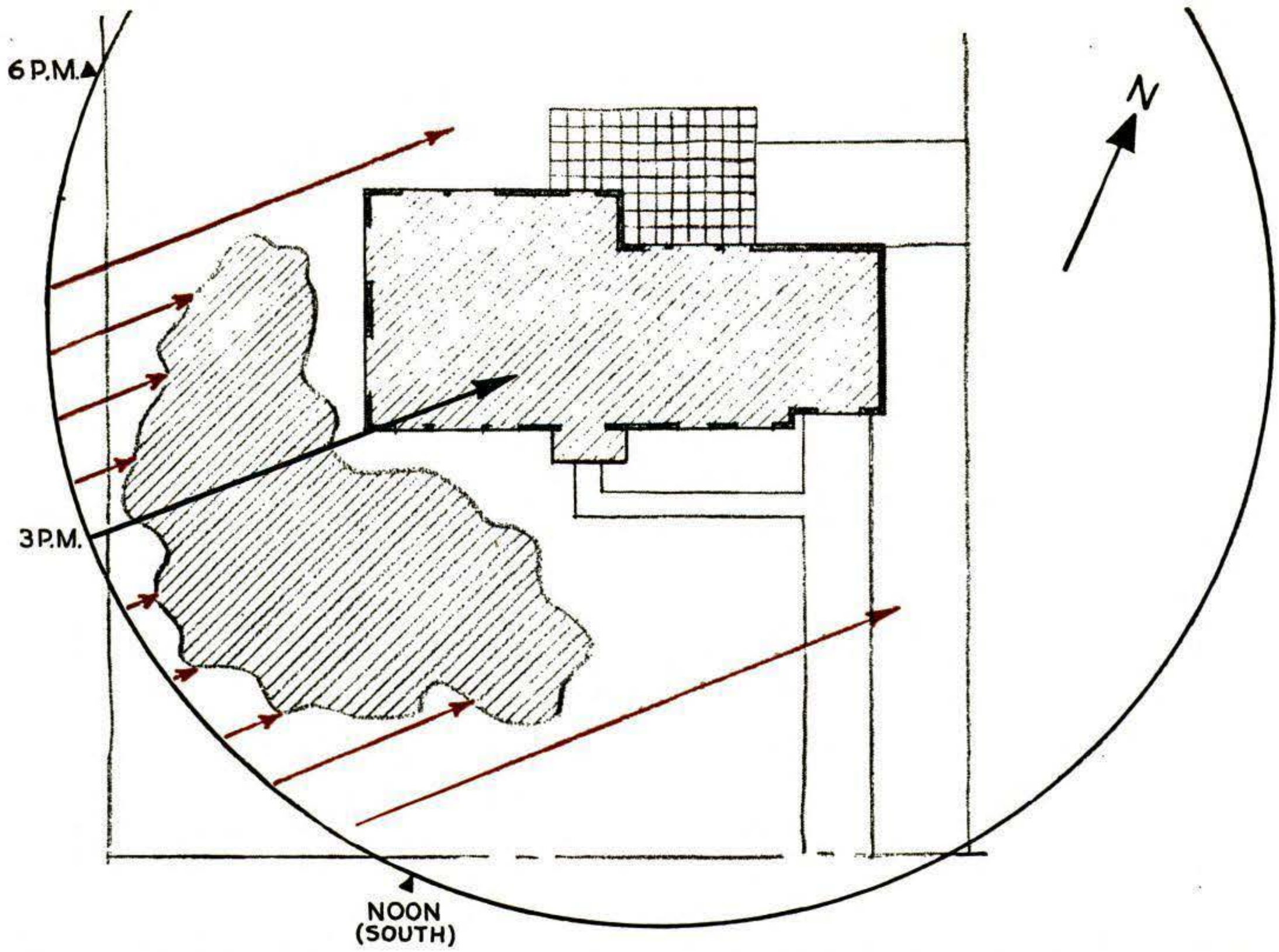
And then the little woman comes in. Did you notice, she says, how bare the house is as you come up the street—like a gasoline station? And do you realize, she says, that everyone driving by can look right in the picture window and see you with your feet on the coffee table?

And then, brother, you realize you've still got problems. Four walls and a roof are only the start of your home.

Fortunately there's a remarkable machine that will solve a lot of your problems. It's an automatic awning that cuts out hot sunshine in August but lets it in in December. It's an efficient cooling machine. It's a wall that builds itself and never needs painting or repairing. It's a playground for the kids, a flower shop and a fruit-and-nut stand. And it's mighty handsome around the yard. It's called a tree.

Most house builders just bulldoze them out of the way. But this country needs more

Copyrighted material



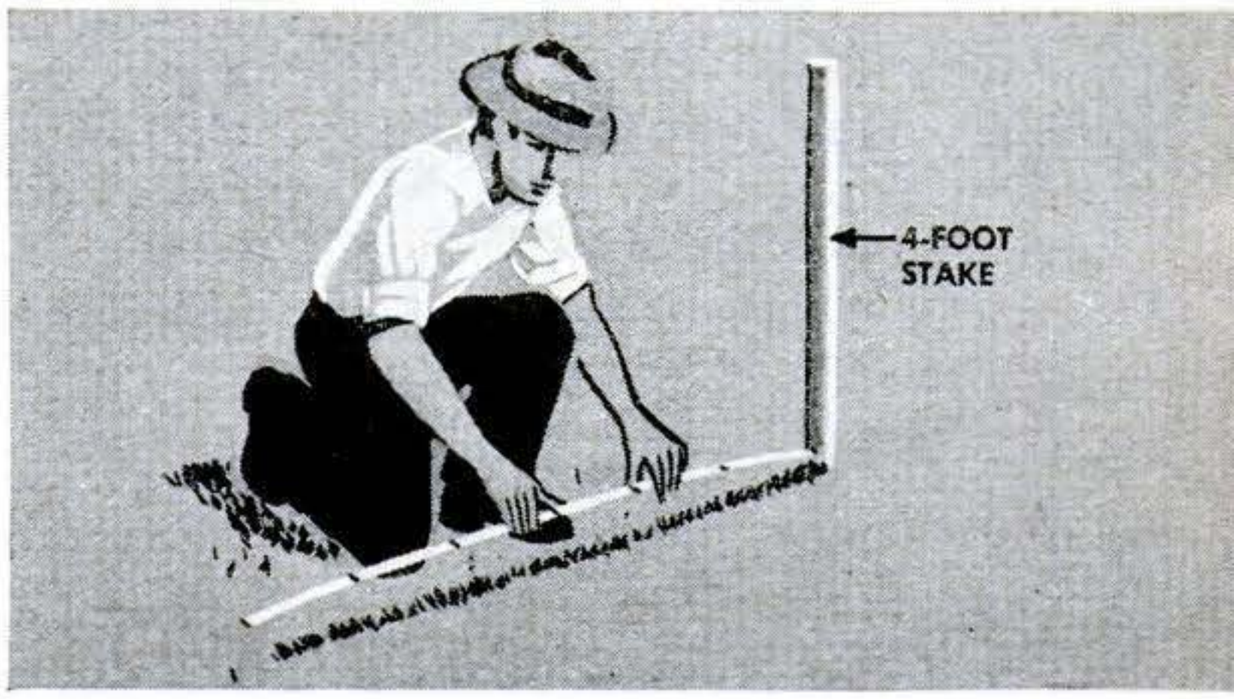
TO FIND DIRECTION of sunlight and shadows in hot hours, draw an arc around southern half of your sketch plan. Mark due south: sun will be there at noon, standard time, will move about 15 degrees along arc each hour. Point for any desired hour can be found with protractor. Lines parallel to arc radius at any point will show direction of sun's rays at that hour (it's three o'clock above). Block in places trees must go to shade house then.

trees. And now's the time to plan them. When tree-planting time comes, in the fall, all but the evergreens will have lost their leaves and it will be hard to tell what they look like. So look at your neighbors' trees and visit nurseries now, when trees are in full leaf. Make your plans in late summer and be ready in the fall.

For there's a lot more to planting trees than getting a mess of saplings and sticking them in at random. Trees come in all shapes and sizes. A good yard takes as much planning as a good shop.

- Make a rough plan of your house and yard so you get the trees in the right place the first time. Transplanting is hard on both you and the tree. You may have gotten a survey map with your deed, which you can trace. Locate true north (which may be different from the compass reading).
- Figure out just what you want trees to do for you. Trees vary as much as tools—and you wouldn't buy a milling machine to build a garden chair.
- Now decide where the trees must go to meet your needs. Block them in on your plan. All you need is a rough indication of their size when grown.
- Finally, choose the kinds of trees that have the proper shape and size.

Let's run down what trees can give you.



LENGTH OF SHADOWS can be found by this method. Some sunny summer day, stick four-foot stake in lawn and measure shadow. Tree shadows will be in same ratio to stake shadow as tree heights are to four feet.

Copyrighted material

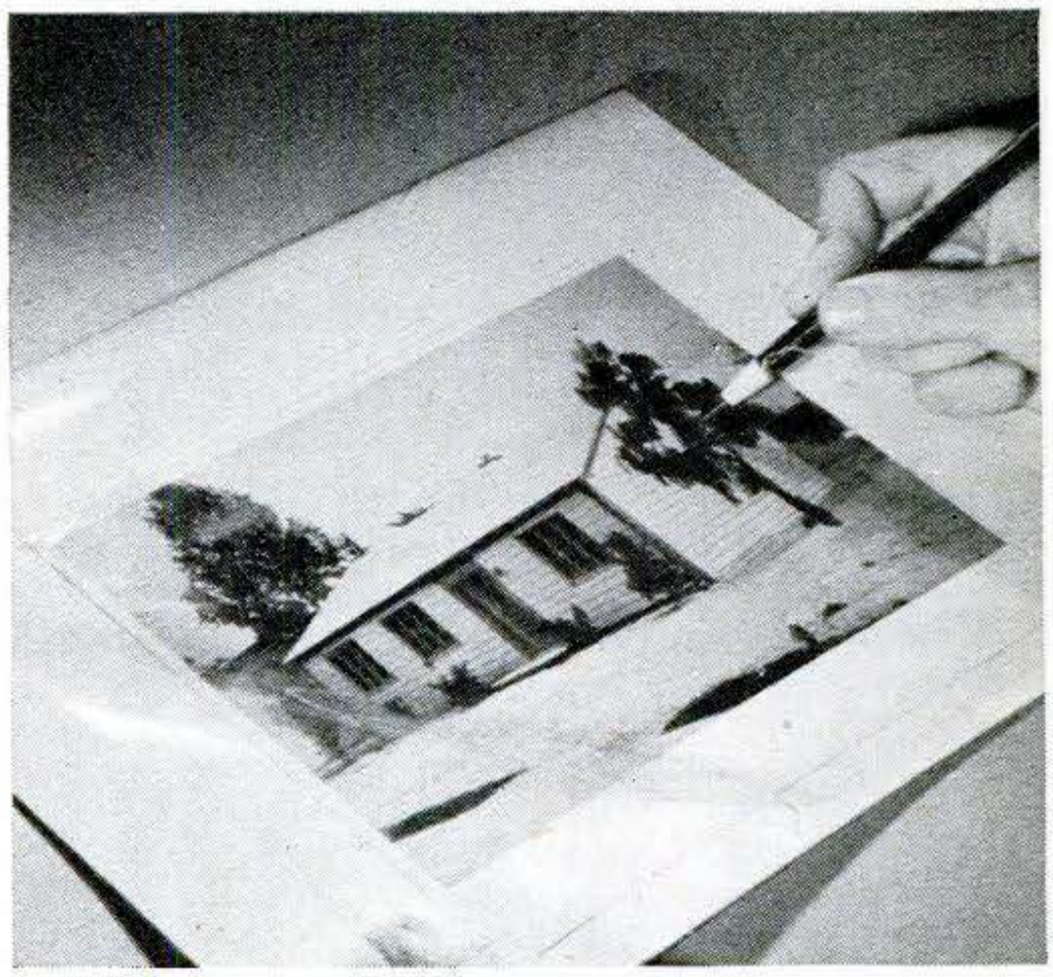
Shade and coolness. An unshaded picture window can seem like an open furnace door on a hot day. Properly placed, trees can cut the summer temperatures in your house from five to 15 degrees—mighty cheap air conditioning. And they'll shed their leaves to let the winter sunlight in when you want it.

What you have to find out is where the summer sunlight comes from—what direction and from how high in the sky. This can be calculated for any place, day and hour by a trigonometric formula using latitude and longitude. But you can get close enough with a little experimenting and rule-of-thumb methods as shown in the accompanying diagram. Incidentally, if you live near the edge of your time zone, the sun will arrive at due south almost half an hour early or late by the clock.

Remember that the sun will be highest late in June so you will need taller shade trees than experiments made this month will show. Don't bother to find the direction of sunlight for every hour of the day; concentrate on the hot hours—from noon to four o'clock usually.

You may find that to get enough shadow you'll need a big tree. Grown trees are expensive, so it's better to start with a smaller, fast-growing tree. Put it closer to the house so that it gives the same shade. A fast-growing five-year-old tree usually takes about five more years to attain 80 percent of its shade foliage. You can put in a sapling of a future big tree farther from the house to take over later.

When you plot a shade tree on your plan, it's a good idea to show not only its present bulk, but how wide it will grow later on.

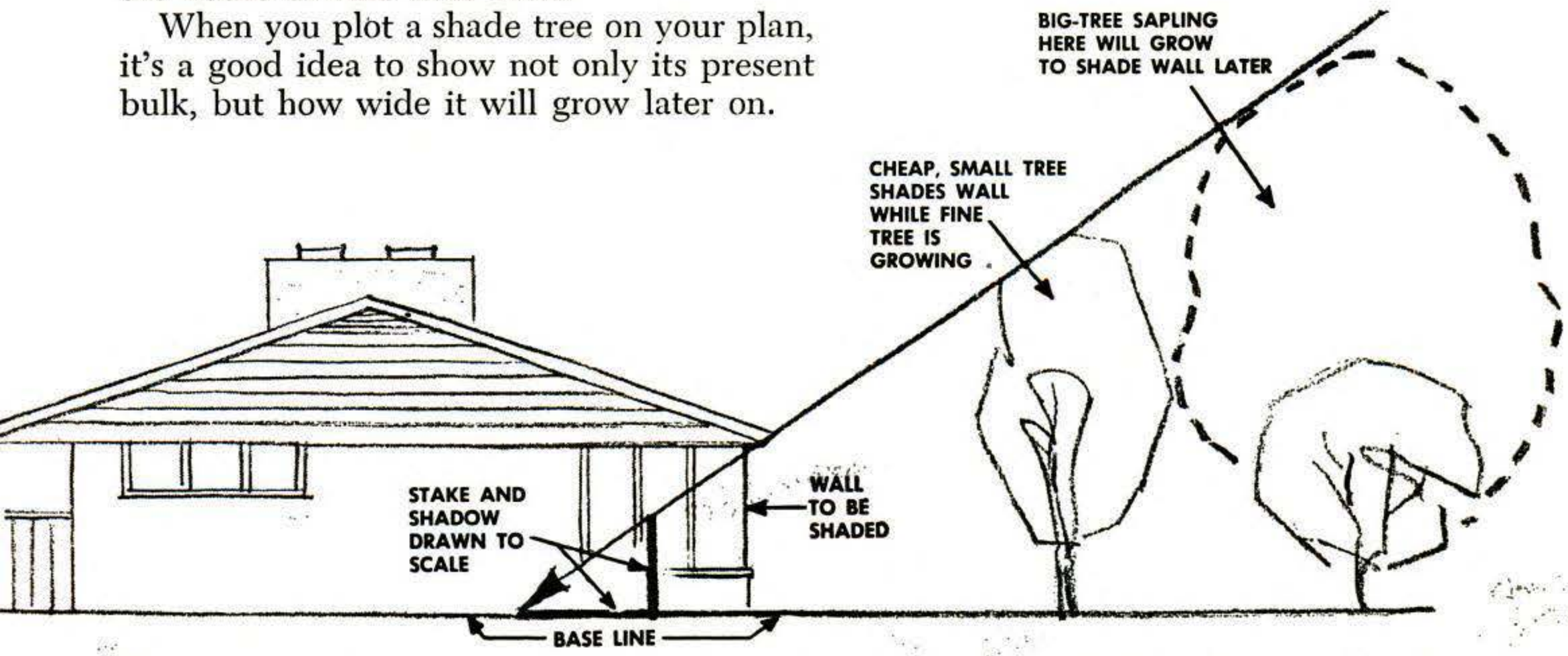


HOW TREES WILL LOOK can be visualized by covering enlarged photograph of house with acetate or tracing paper and blocking in with a grease pencil where leaf masses will come.

Trees actually cool, besides giving shade. Unlike an awning, they use some of the sun's energy for growth, instead of reflecting it or absorbing it for reradiation later. According to German tests, it is also slightly cooler below the treetops of a forest than above, even ignoring the direct heat from sunlight. Turbulent air currents keep some hot air above the crown, while cooler air sinks down between the trunks.

Windbreak. Trees can block wind and snow as well as sun. The big "shelter belts" on the plains of the Midwest use several

[Continued on page 236]

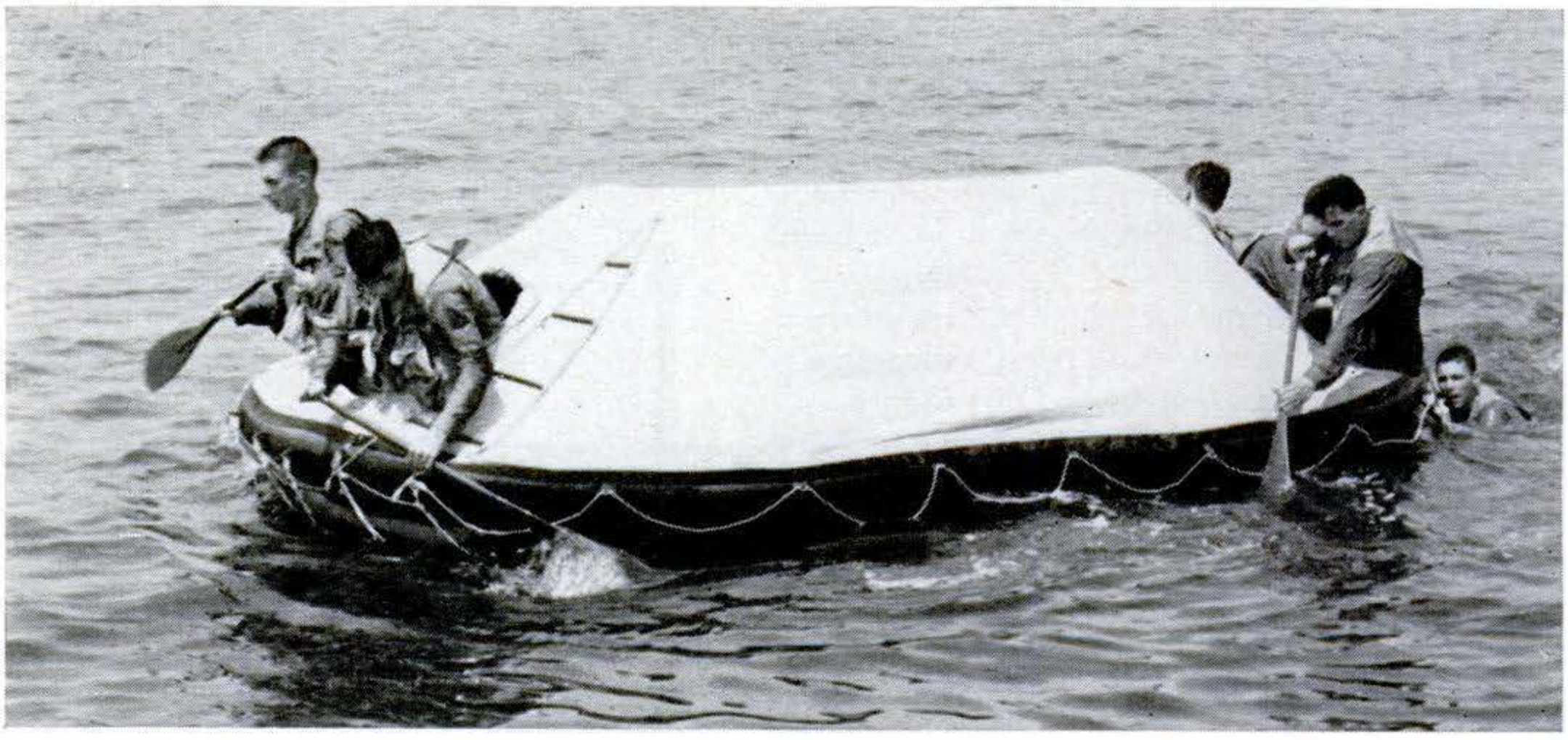


HEIGHT OF TREES you need to shade house at any given hour can be found on scale drawing showing stake and shadow at that hour. Line from shadow's end past top of stake will be shadow angle. Any tree whose top reaches shadow line will shade house wall at that point (at other points shadow falls lower on wall). Measuring along base line will show how far tree must be from house. To shade entire wall, you'd need row of trees.

Copyrighted material

1 "SURVIVORS" swim toward the raft package in recent demonstration. A pull on a cable releases carbon dioxide gas that snaps the 230-pound craft out of its case and inflates it.

2 INSULATING CANOPY is automatically raised as gas fills rubber arches that will support it. The three-inch-thick floor liner is inflated by hand, can serve as extra raft.



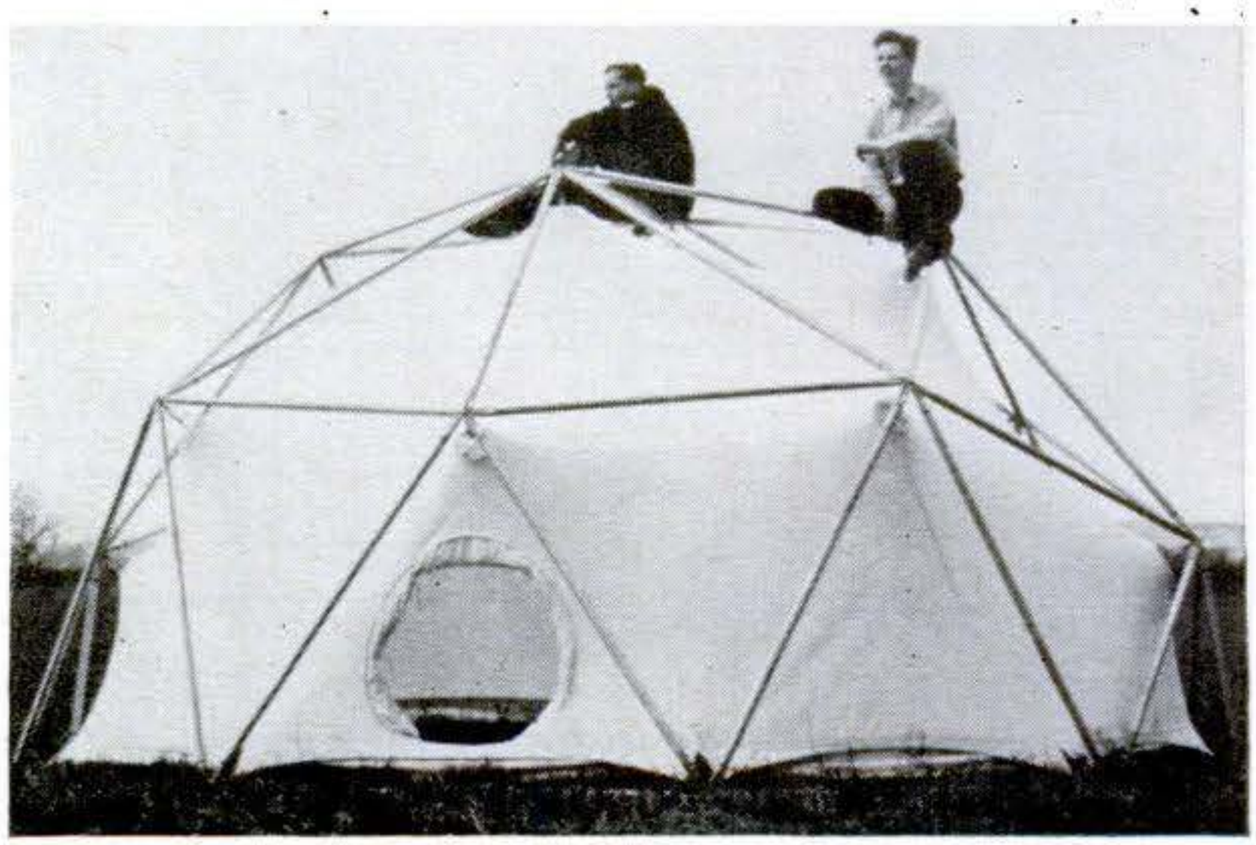
3 FULLY INFLATED IN 30 SECONDS, raft has two entrances that can be left open or closed, depending on weather. Navy's Bureau of Ships and B. F. Goodrich Co. developed it.

New Raft Protects Survivors Against Arctic Cold and Tropic Heat

SHIPWRECKED sailors can set up comfortable emergency housekeeping on seas from the Arctic to the Equator aboard this new life raft. Its thick canopy and floor liner contain insulating spaces that shield the raft against heat or cold. With 15 men aboard, body heat alone can maintain the interior at 70° even in sub-zero weather.

Inside-Out Tent to Beat Arctic Blizzards

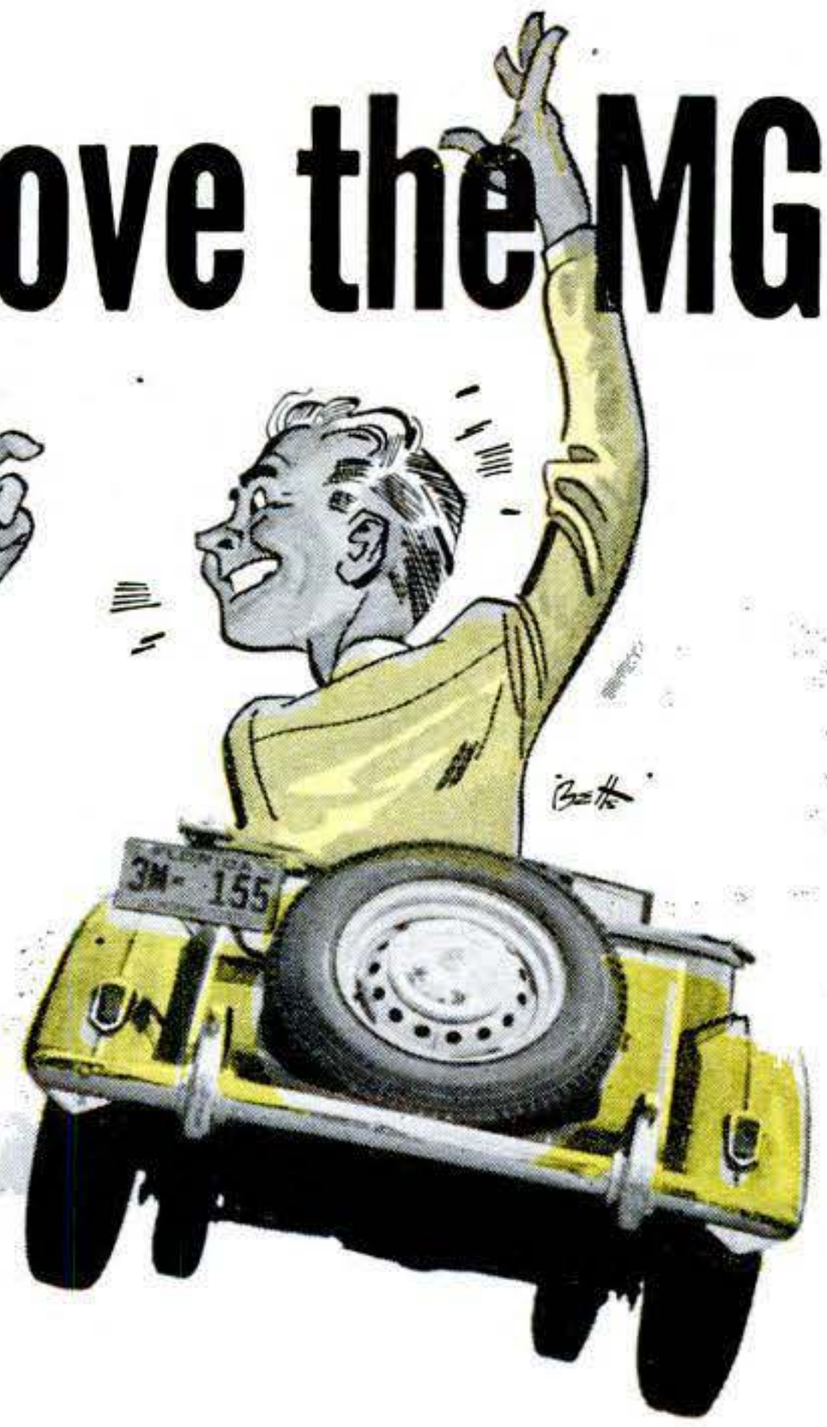
BUILT to call the bluff of the most boisterous blizzard, this new arctic tent is built inside out. The complete packaged unit weighs only 145 pounds, can be erected by two men in 25 minutes. The aluminum-tubing frame can take an extra cover in extreme weather. It will be used on Baffin Island next summer by scientists of the Arctic Institute of North America.



Copyrighted material

Wilbur Shaw Tells Why

A Lot of Guys Love the MG



It's hard, cramped, low-powered—everything Americans are supposed to hate—yet its sales are booming.

REPORT FROM THE

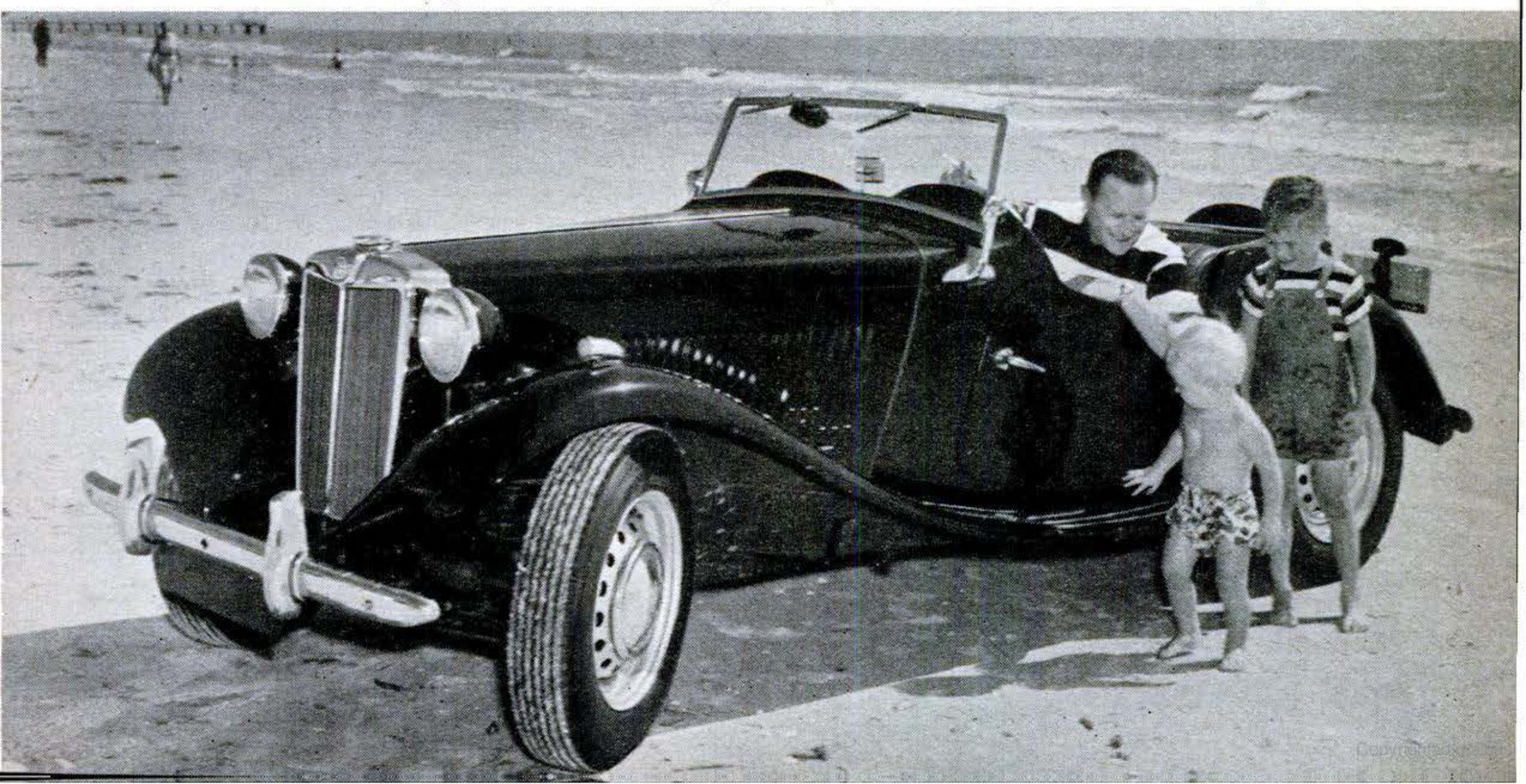
DRIVER'S SEAT...

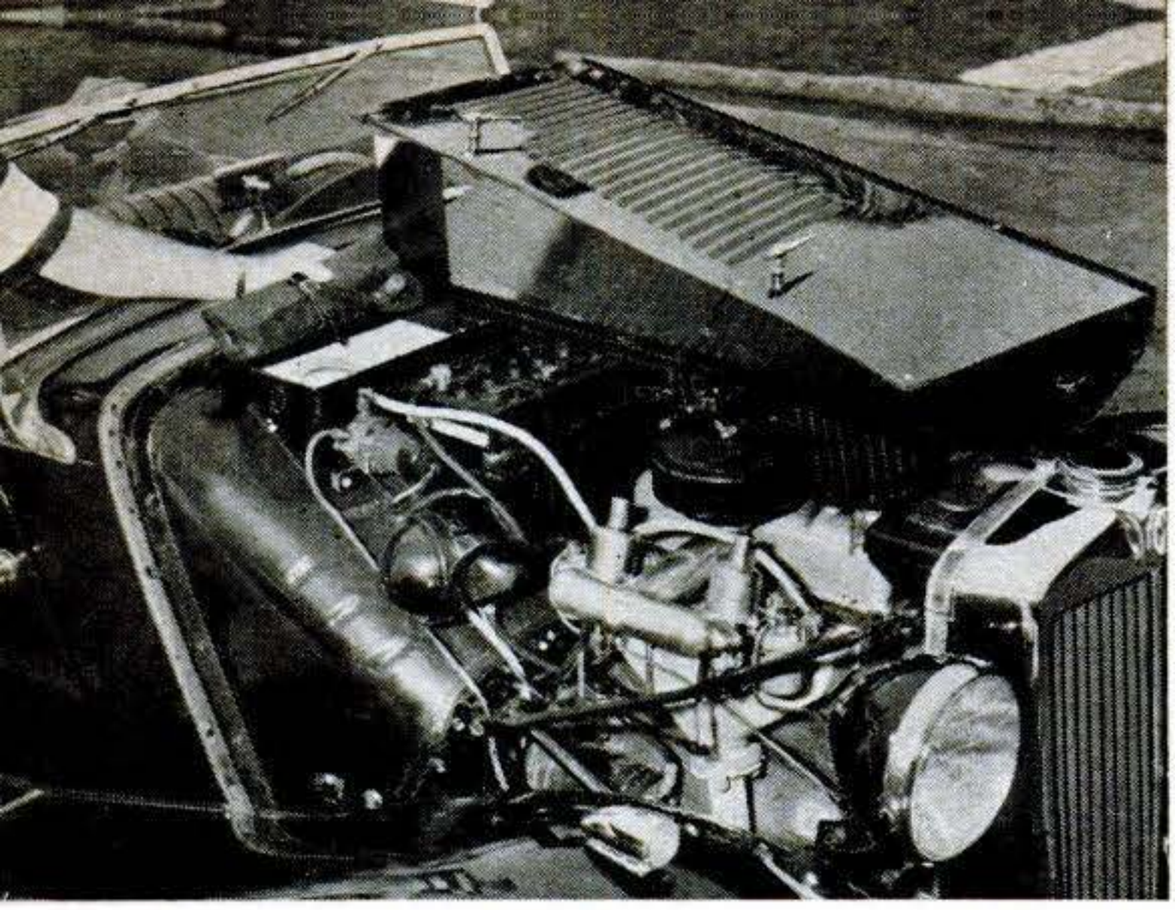
By Wilbur Shaw

THE MG, advertised by the manufacturer as the world's fastest small car, is more than a car. It's a cult. Driving it is like eating kumquats for breakfast. You have to know the rites.

This month I'm going to try to explain the MG cult—but I honestly wonder how far I'll get. The MG is far and away the most popu-

The MG cult has no age limits. On the right is my son Bill who insisted on riding in this car.

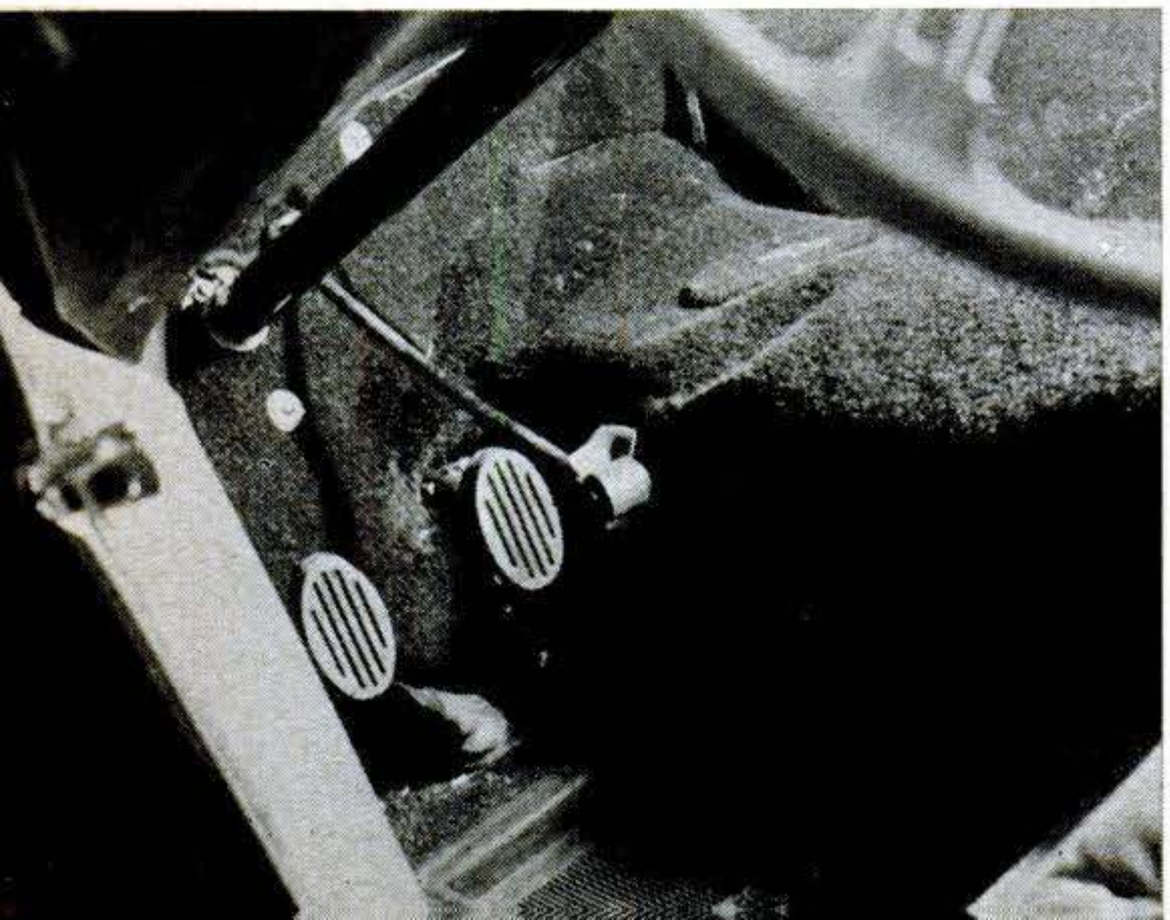




The under-hood toolbox measures 22 by 4¾ inches. The manufacturer pays outstanding attention to mechanical detail. The two carburetors, for instance, have sleeve-type throttles instead of butterflies. The workmanship would be prohibitively costly on U. S. cars.

I've pulled up the hand brake here and have my fingers on the midget-size shift lever. The instrument panel has a tachometer and lights to indicate battery discharge and fuel shortage. The windshield wipers are electrical.

The pedals are tiny, measuring only 1¾ by 2¾ inches. The roller-type accelerator, snugged up against the transmission tunnel, is easy to miss with your right foot. I had a time finding a place to rest my clutch foot.



lar sports car in the United States. It is also one of the most uncomfortable vehicles on four wheels. It rides hard. It's underpowered. It's cramped. (That, members of the cult tell me perversely, is why they like it!)

Small but Economical

For export, it is being Americanized. The "dip switch" (light dimmer) is being transferred from the instrument panel to the toeboard. Of course, it's a left-hand drive.

Here's what I said on my recorder:

Some people don't mind long trips in one of these things . . . but . . . there's no place to rest my clutch foot . . . the seat's snug, even for a medium-sized man . . . There's good steering-wheel clearance over my lap, though. The sun's hot . . . this is a solarium on wheels.

I fired up. This involves pulling a button on the dash, or facia, as the British call it. The saucy little engine spoke up. The engine is economical, let's admit it. Depending on a driver's personal habits, he can get from 24 to 28 miles to the gallon in everyday motoring. If he's satisfied with 50 miles an hour on the open road, he can get as high as 30 miles to a gallon. If he's consistently heavy-footed, he will get 20 miles a gallon.

The low horsepower in the MG's engine is reflected in the gear ratios. The over-all ratio in first gear (counting in the rear-axle ratio) is 17.9 to 1. That compares with 9 to 1 for a Plymouth, 12 to 1 for a Chevrolet and 10.8 to 1 for a Ford. Here are the figures on second gear: MG 10.6 to 1, Plymouth 7.1 to 1, Chevrolet 6.9 to 1 and Ford 6.2 to 1. The MG's third gear, more comparable to our second gear, is 7 to 1. Its high is 5.125 to 1, compared with Plymouth's and Ford's 3.9 to 1 and Chevrolet's 4.11 to 1.

At 1,000 revolutions a minute the MG produces only 11 horsepower, at 4,000 only 47 horsepower, and it doesn't reach its maximum of 54.4 horsepower until 5,200 r.p.m.

You have to keep driving this car . . . don't let your attention wander . . . the steering is extra-fast (the over-all steering

Copyrighted material

ratio is 13.75 to 1; U.S. steering goes as high as 26 to 1) . . . acceleration requires a lot of shifting. You have to avoid bumps . . . every bump is a kick in the pants, the springing is that stiff.

I found an open stretch of road and mashed the accelerator. It took a full mile and a half to get an absolute top-speed reading—82 miles an hour. That was without speedometer correction, but I had to admit it was pretty good for the horsepower.

My son Bill and I started for the beach, my wife tooling along behind us in the big convertible.

I'll concede one thing . . . this car does get around . . . it can slip in and out of traffic like a greased eel . . . and the acceleration isn't bad. But, on the other hand, you feel every road shock in the wheel . . . that's due to rack-and-pinion steering instead of worm gears or rollers or cams . . .

"Can't see mother," announced Bill.

The MG, darting in and out of the traffic, had brought us out on the open highway. My wife and the big car were caught somewhere back there on the highway. I parked.

"What do these cars sell for?" a voice suddenly questioned behind my shoulder.

I squared around. The expression on the face of my questioner was unmistakable: he was ready to buy the car on the spot. Before

I could reply that it sold for around $2,000, three or four other people appeared from nowhere and began to ask questions. They nosed around the instrument panel. One man opened and closed a door. Another one was down on his knees looking at the car's underpinnings.

Okay, *you* explain it.

At the beach I drove the MG down on the sand. My big car stayed on the road. It

[Continued on page 228]

How to Understand English

If you use the trafficators[1] on your saloon[2] conscientiously, handle the dip switch[3] with good manners and sport undented wings,[4] you are very possibly an expert driver. If you make a petrol[5] stop in the drophead[6] model and want to add air to the spare tyre, you must of course know whether to raise the bonnet,[7] hood,[8] boot[9] or screen.[10]

That's how the British motorist sometimes talks about cars. Sometimes he calls the dash a facia board, the hub caps nave plates and the defroster a demister. A radiator cover is a muff and the transmission is a gearbox.

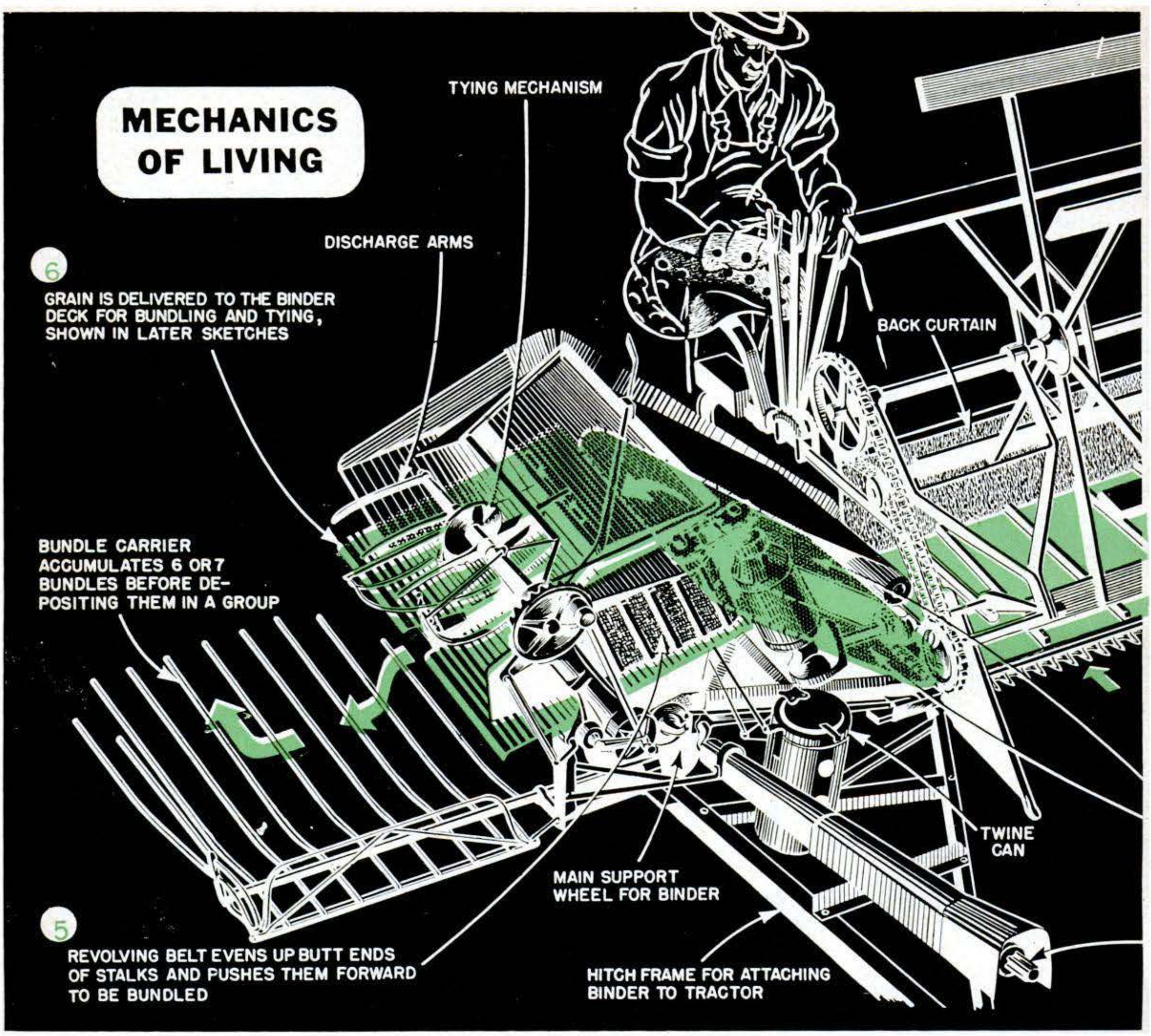
If he mentions a strangler, it's not a Scotland Yard case but only the engine choke. Whereas if he says choke, he really means the venturi throat of a carburetor—oops, carburetter.

The English mechanic fastens a collar on a shaft with a grubscrew[11] and turns a spigot[12] on a piece to fit a socket. Naturally he uses a spanner[13] to tighten the sparking plugs[14] and is at times careful to leave one piece a few thousandths proud of[15] another.

If you have defined 10 of these 15 keyed terms correctly, you have something to be proud of yourself.

1. Turn indicators; 2. sedan; 3. dimmer switch; 4. fenders; 5. gasoline; 6. convertible; 7. hood; 8. top; 9. trunk; 10. windshield; 11. setscrew; 12. tenon; 13. wrench; 14. spark plugs; 15. protruding from.

Copyrighted material

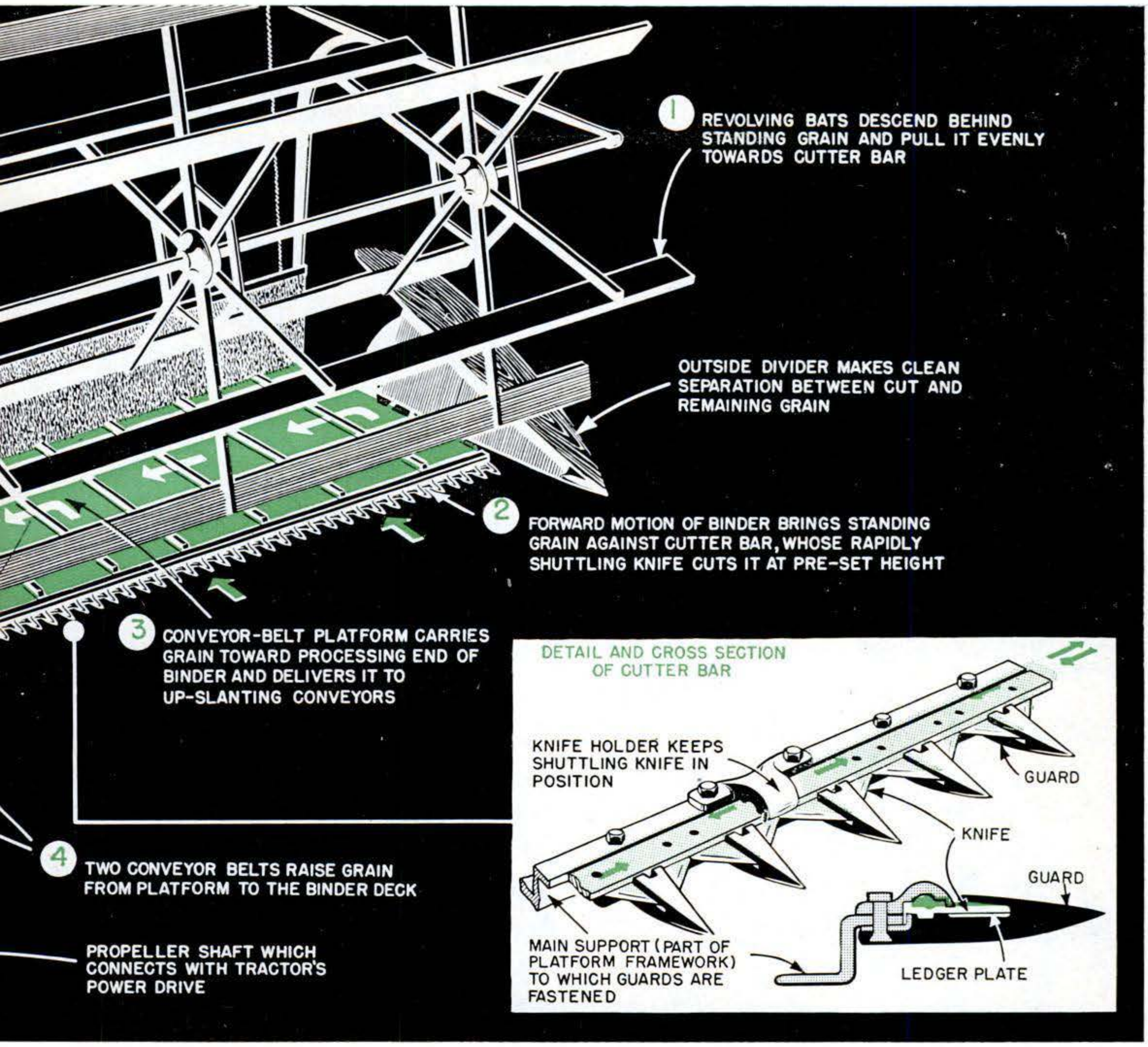


How a Grain Reaper

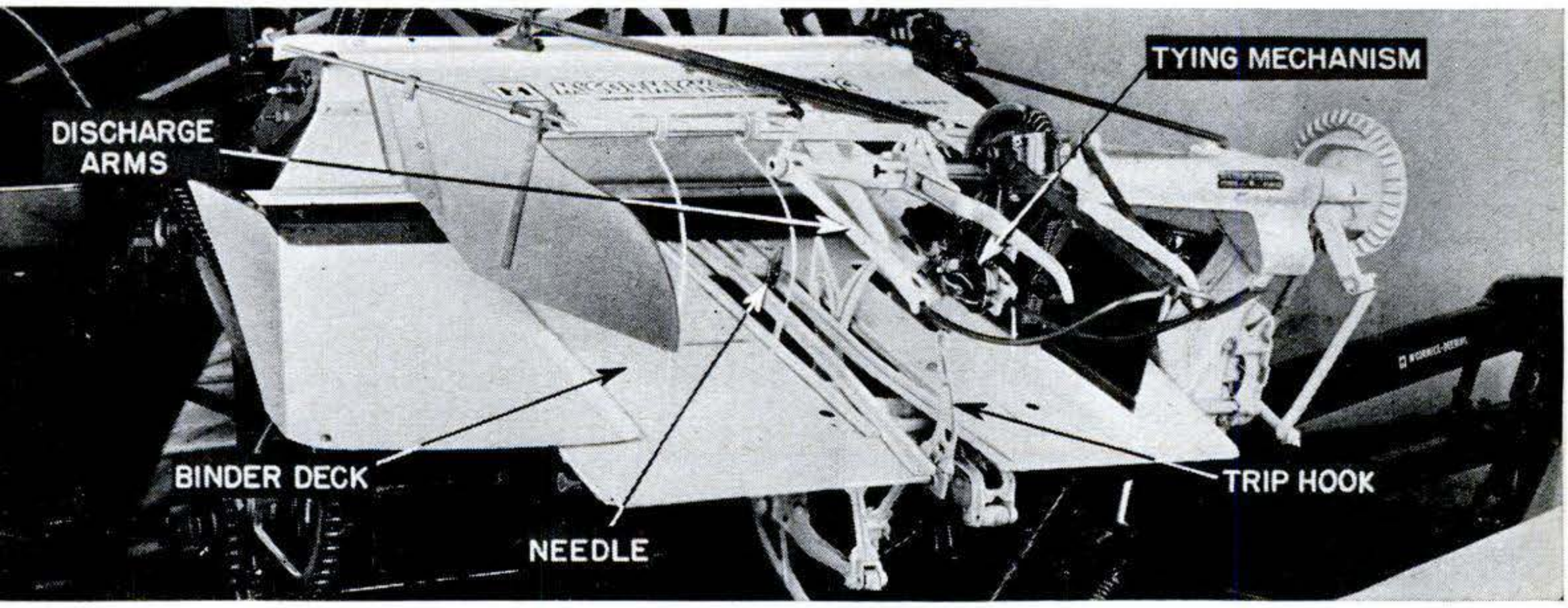
THIS SLICK DESCENDANT of Cyrus McCormick's original reaper, introduced to the world 121 years ago, is drawn by a tractor (left), which supplies it with power through a revolving shaft. The power take-off shaft operates at a constant speed regardless of the forward speed of the tractor.

A FULL-FACE VIEW (right) of intricate binder and tier, which is at the driver's right in drawing of McCormick-Deering reaper and binder above. This unit forms bundles of the cut grain, tall or short, then ties and knots them. Turn the page for detail drawings showing how machinery does these jobs.

Copyrighted material



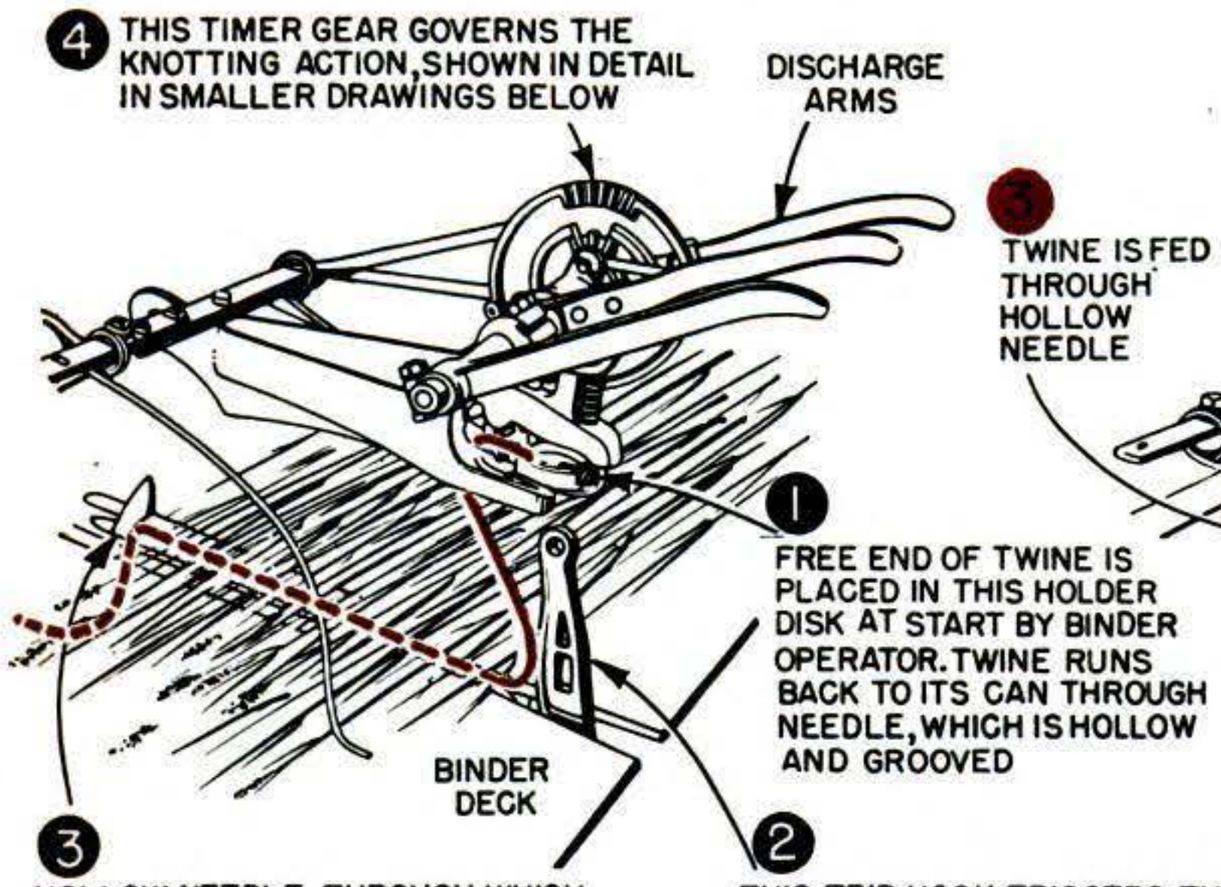
and Binder Works



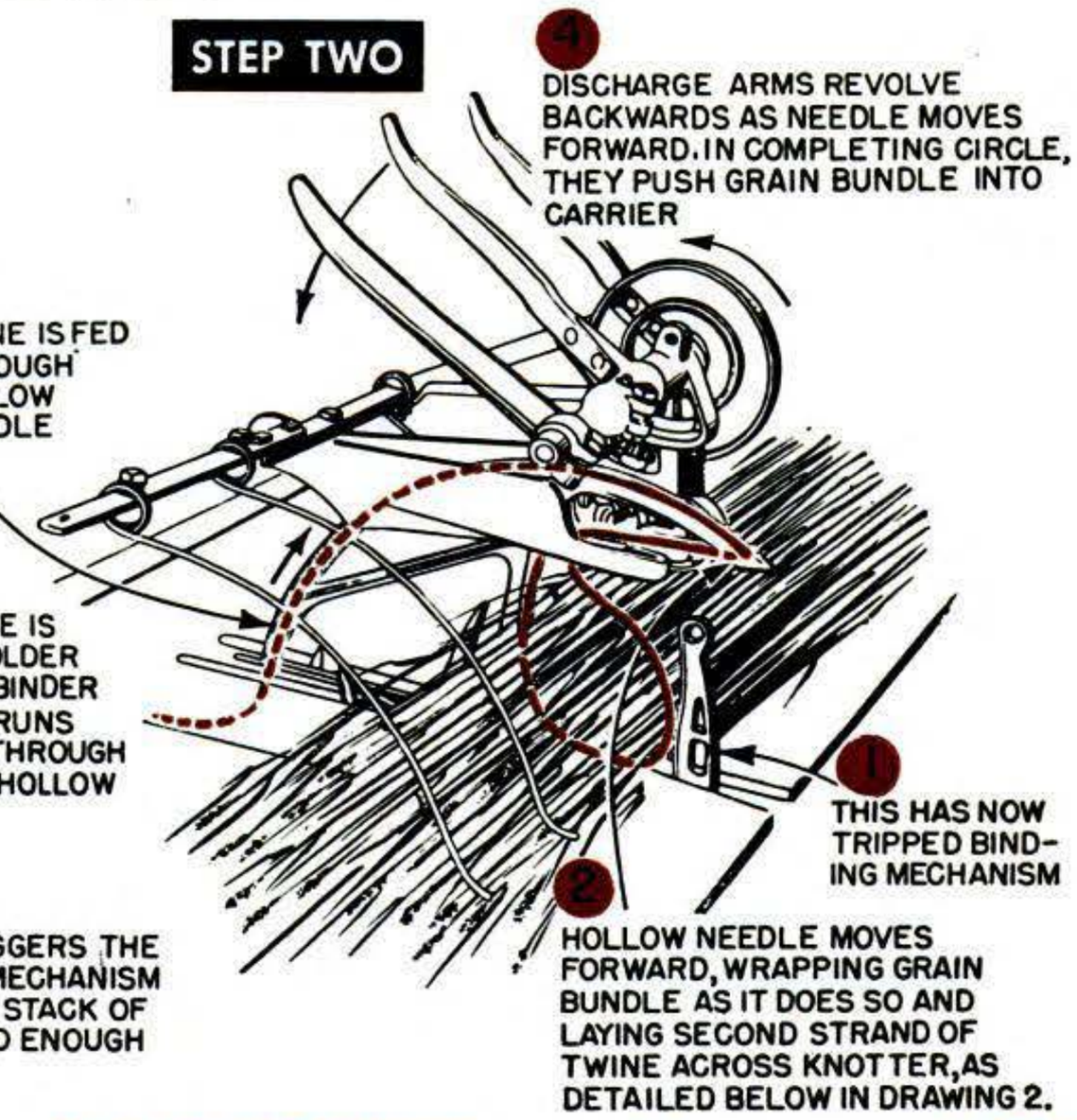
Copyrighted material

CONTINUED How Grain Binder Ties a Bundle

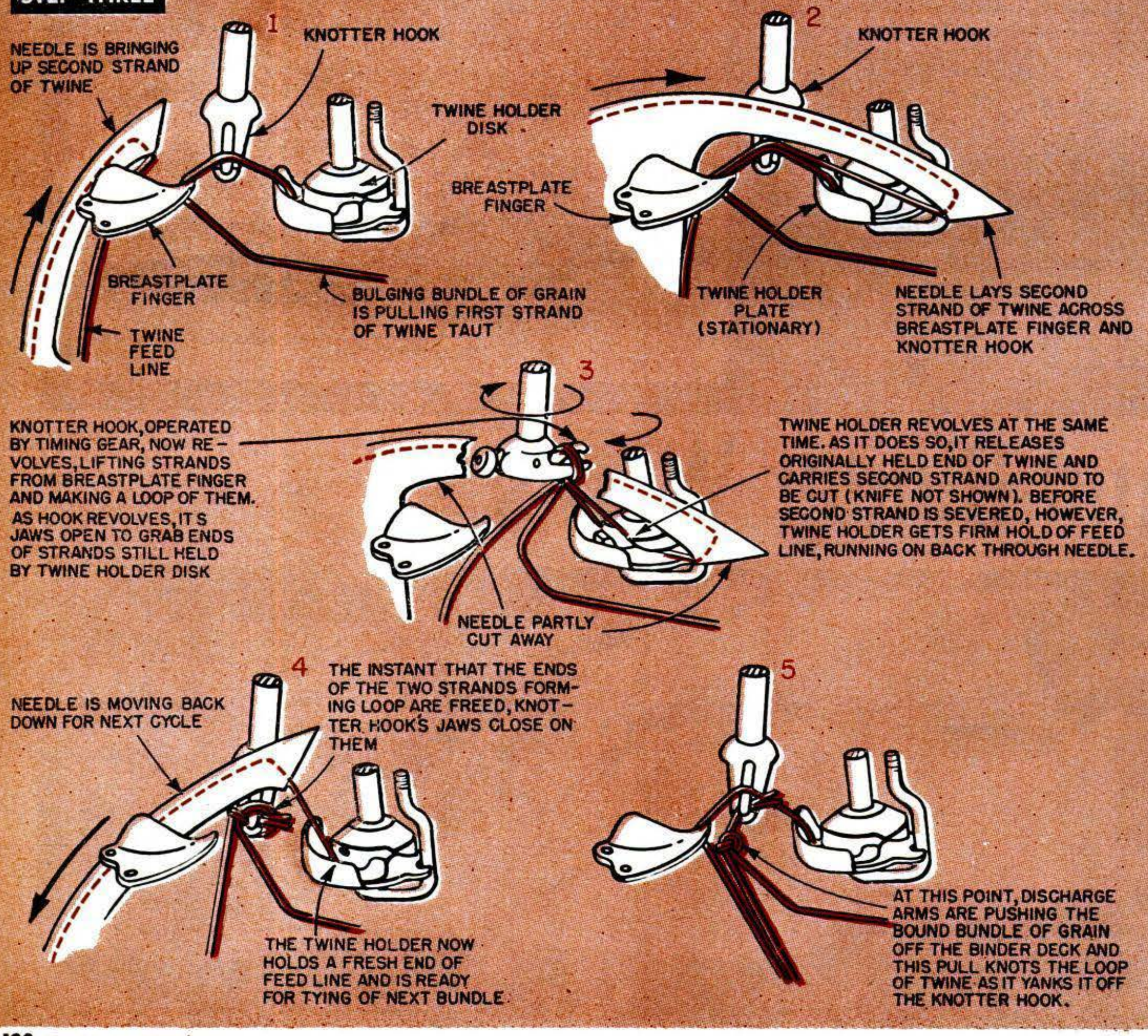
STEP ONE



STEP TWO



STEP THREE



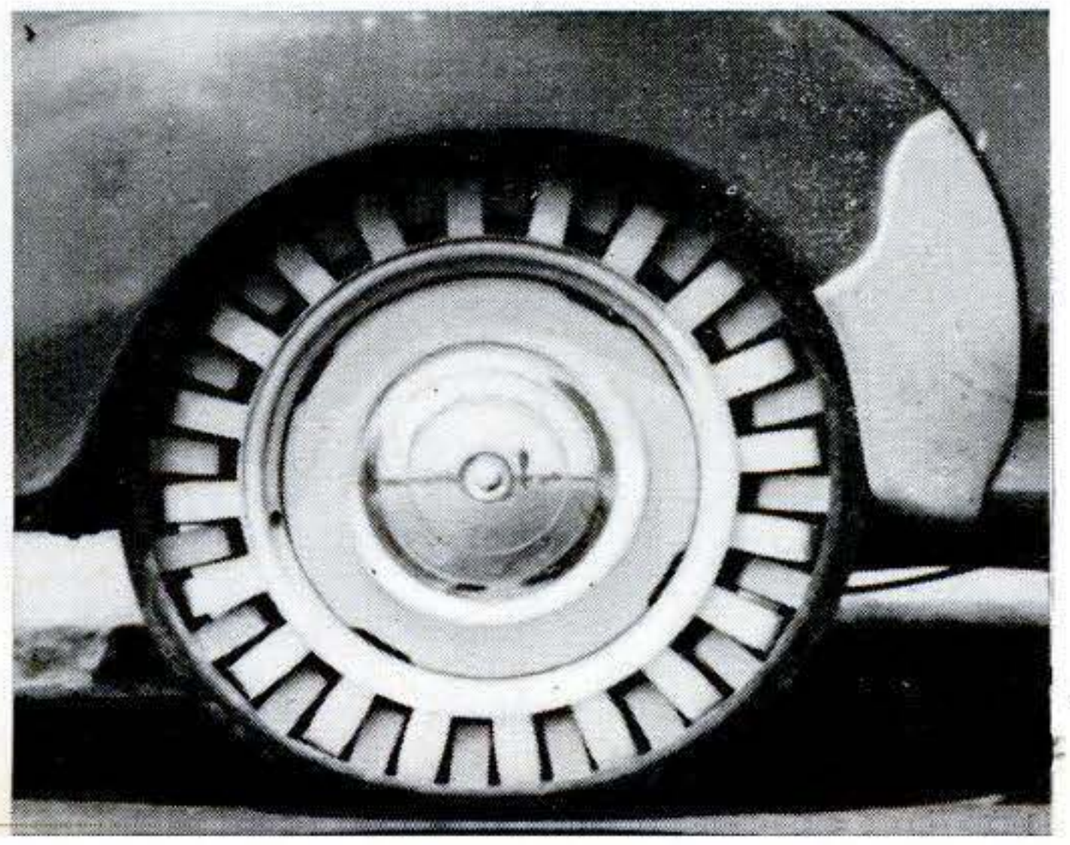
Copyrighted material

Roadway Paved on a Slant

In the novel way pictured above, road builders solved the problem of repaving banked turns of a high-speed auto test track at Milford, Mich. Since the slope reaches a maximum of 37 degrees, so steep that it is difficult to walk up, the 11-ton roller had to be hung on cables from a special truck to smooth the paving mix. The truck has four extra wheels, two riding on top of a concrete curb and two bearing against its outside wall. A two-ton, cast-iron counterbalance on the truck's far side helps to keep it from overturning.

Frenchman Puts Teeth in Tires

Lucien A. Bernard of Arras, France, dreamed up a flexible wheel which he claims is punctureproof. Lugs of a solid rubber-like material attached alternately to an inner metal rim and an outer tire intermesh like gear teeth.



75 years ago this month

Popular Science Monthly reported:

"PROF. HEBRA, of Vienna, dissents from the generally-received opinions as to the benefits of frequent resort to the bath. His views on this subject, as set forth at some length in the *Boston Journal of Chemistry*, are to the following effect: It is not true that frequent bathing is conducive to health, and harmless. Millions of men take no baths of any kind, at most washing only the face and hands, and yet live to old age in good health."

Copyrighted material

P.S.

Last minute news & notes...

EVEN IN -65° COLD, gasoline engines are started in 30 seconds by an attachment called a gasifier, originally designed for U.S. planes and now on trial for ground vehicles. The device is a precombustion chamber, with a spark plug of its own. It burns a part of the fuel, heating and vaporizing the rest on the way to the cylinders, and supplements the carburetor for starting only. The Robert Reichhelm Co. of Stratford, Conn., developed it.

FASTEST FLIGHT by man, 1,238 miles an hour, has been confirmed by the Navy. The speed record was made by the rocket-powered experimental Skyrocket, which at the same time set an altitude record of 79,494 feet.

HIGHEST SPEED ever given a projectile by man, 99.99994 percent as fast as light, is reached by electrons in a new Caltech synchrotron. Then they crash into a lead target and produce 460,000,000-volt X rays, the world's most powerful.

A BABY STAR only 2,500 miles in diameter--smaller than the earth--has just been discovered. Smallest known, and relatively near the earth, it belongs to the class called white dwarfs, which are noted for great density and hot surfaces.

JOLTS OF JUICE will free some power-transmission lines of ice this winter. When sleet forms on a wire and the weight threatens to snap it, a calculated overload of current is sent through it. Like the heating element in a toaster or iron, the wire gets hot, and the ice melts.

TEN NATIONS of continental Europe have set up a European Council for Nuclear Research and will build a $24,000,000 International Laboratory--possibly at a site offered by Switzerland, one of the member countries. The others are Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Sweden and Yugoslavia.

A NEW TRANSMISSION for six-cylinder Chryslers pairs a torque converter with the semiautomatic gearbox used since 1941. The torque converter, a simplified version of the one in Chrysler and De Soto V-8s, is unique in that it shares the engine's oil system. While you have to buy 13 quarts at every oil change, Chrysler says that two changes a year are enough.

ARMY TELEPHONE and telegraph circuits now use an improved cable, providing 12 circuits instead of the previous four. Already carrying messages in Korea, the cable is suited to climates from the Arctic to the tropics, and heavy trucks can rumble over it without harming it.

INTERLINGUA, newly invented international language, borrows words from many tongues but sidesteps their intricacies of grammar. If you know a little French, Spanish or Italian, you can understand it at first sight, its advocates say. Sample: "Energia es necessari pro toto que occurre in le mundo." Translation: "Energy is necessary for everything that happens in the world."

A $10,000 REWARD is being offered by the American Humane Association of Albany, N.Y., for a "humane" small-animal trap. Executive Director Mel L. Morse says the reward is offered in an attempt to end the use of the steel trap, "one of the greatest cruelties to animals still remaining in our civilization." The prize-winning trap must either hold the animal unharmed or kill it instantly. Among other requirements, it must not damage the pelts of fur-bearing animals, and must be simple and cheap to make.

TRANSOCEANIC TV may not be so far off after all. A new discovery permits transmission up to a range of 1,250 miles, instead of the 50-mile distance previously considered the approximate limit.

The Editors

Copyrighted material

MECHANICS and HANDICRAFT
REG. U. S. PAT. OFF.

The Easy Way to Pave Your Yard

By Darrell Huff

Concrete work doesn't necessarily call for a lot of elaborate forms and heavy work. Here's how to save your muscle—and your money.

DON'T let them kid you about back-yard concrete work.

It doesn't *have* to be done the hard way. You can give your yard the convenience and good looks of garden paths and terraces, and without back-breaking labor.

The approach that lets you do it the easy way is shown in these pictures. This is not the standard procedure for concrete work. But it will cut your work in half.

It is a method I finally came to after considerable experience in paving the traditional--hard—way.

Mind you, I'm not quarreling with the

Copyrighted material

standard specifications for concrete work. Paving, to meet all conditions, must be done to specifications. A driveway, for instance, that may carry several tons of truck must be thick and well based.

But what is nonsense is the common practice of applying these standards and requirements to a garden path or a terrace where you plan to put nothing heavier than a chair or a table or yourself.

Sure, there are other problems. Tree roots can crack concrete. Frost in the ground can heave and break it. The standard answer to this—and it doesn't always work, either—is a lot of fill plus thick concrete. But let's take a look at the four elements that make standard concrete work tough for the home handyman. And let's see how my system gets around all of them.

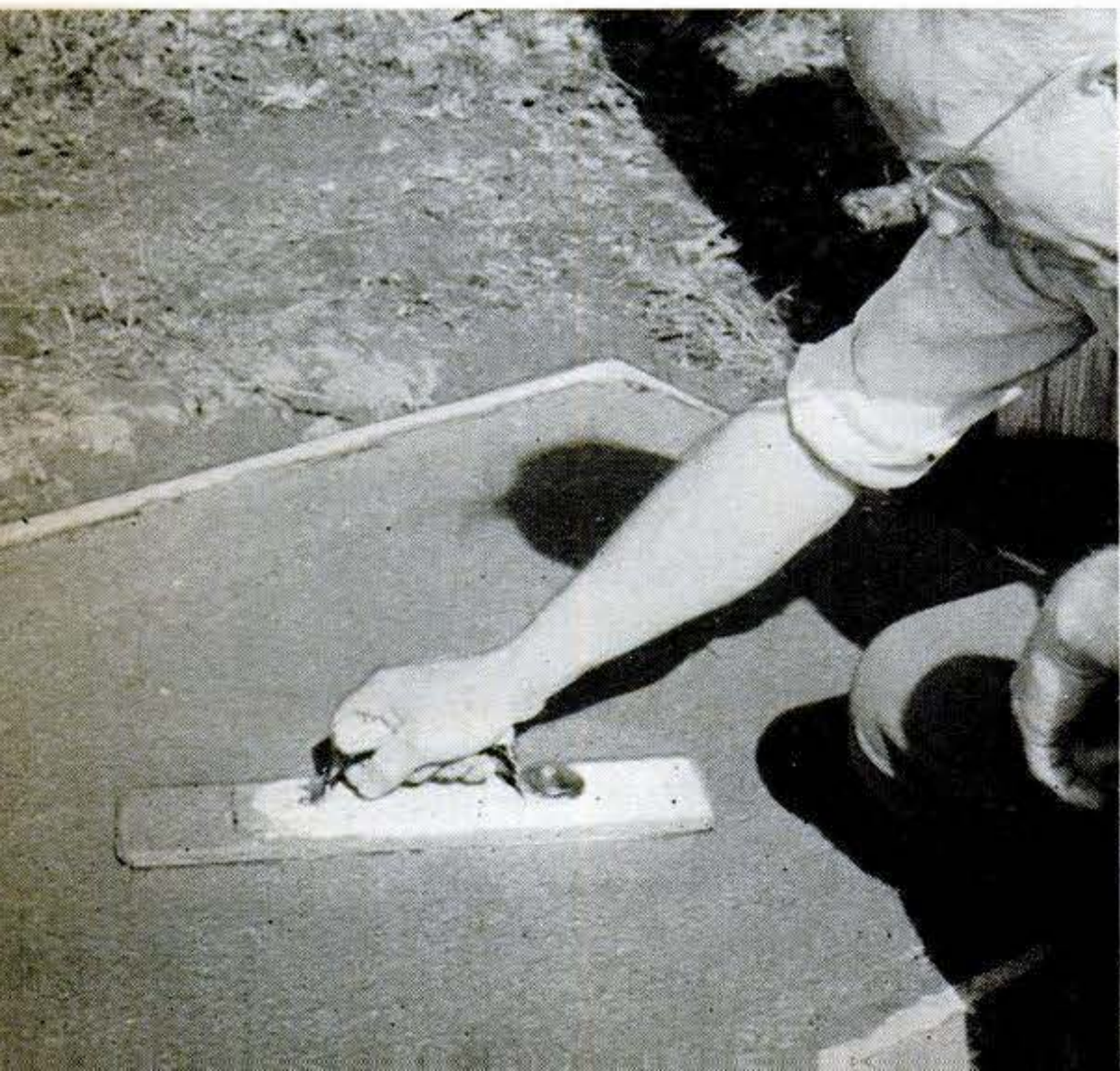
These four things are: leveling the ground; putting in fill, building forms heavy enough to be level and rigid, mixing and placing enough concrete to make a slab 4″ thick.

To begin with, we *don't* level the ground. We let the paths and terraces follow natural contours, doing just enough shovel work to smooth out bumps.

FORMS are pieces of scrap lumber that were ripped into 2″ widths. A few nails at the intersections and a few stakes are all we use.

LEVEL is needed to make sure terrace pitches in direction water should drain. Lumber that made side forms for path is being reused here.

FLOAT is used next to smooth out depressions left by strike board. Float can be made from a smooth board and a screen-door handle.



AFTER CONCRETE has set for a while trowel is applied to give it a fairly smooth finish. We don't bother trying to get a really fine finish.

We *don't* put in heavy forms rigidly staked. We use curves most of the time instead of straight lines. Our forms are ultra-light but still need only occasional staking down. This means pennies instead of dollars for form lumber.

We *don't* use any fill, except where the soil drains badly, because fill adds a lot of work. How do we get away with this? Well, that's the secret of the whole job.

Instead of making continuous walks and big slabs, we convert our whole job into a series of simple stepping stones.

All the forms are broken up into small rectangles by strips of lumber which are left in place permanently. The garden path is a series of rectangles averaging 2′ by 3′. For a terrace, we cast in place concrete "flagstones" 3′ or so square.

The result: if heaving occurs from roots or freezing, each rectangle of concrete will move independently. It can settle back later (or be put back, if necessary) without a crack forming.

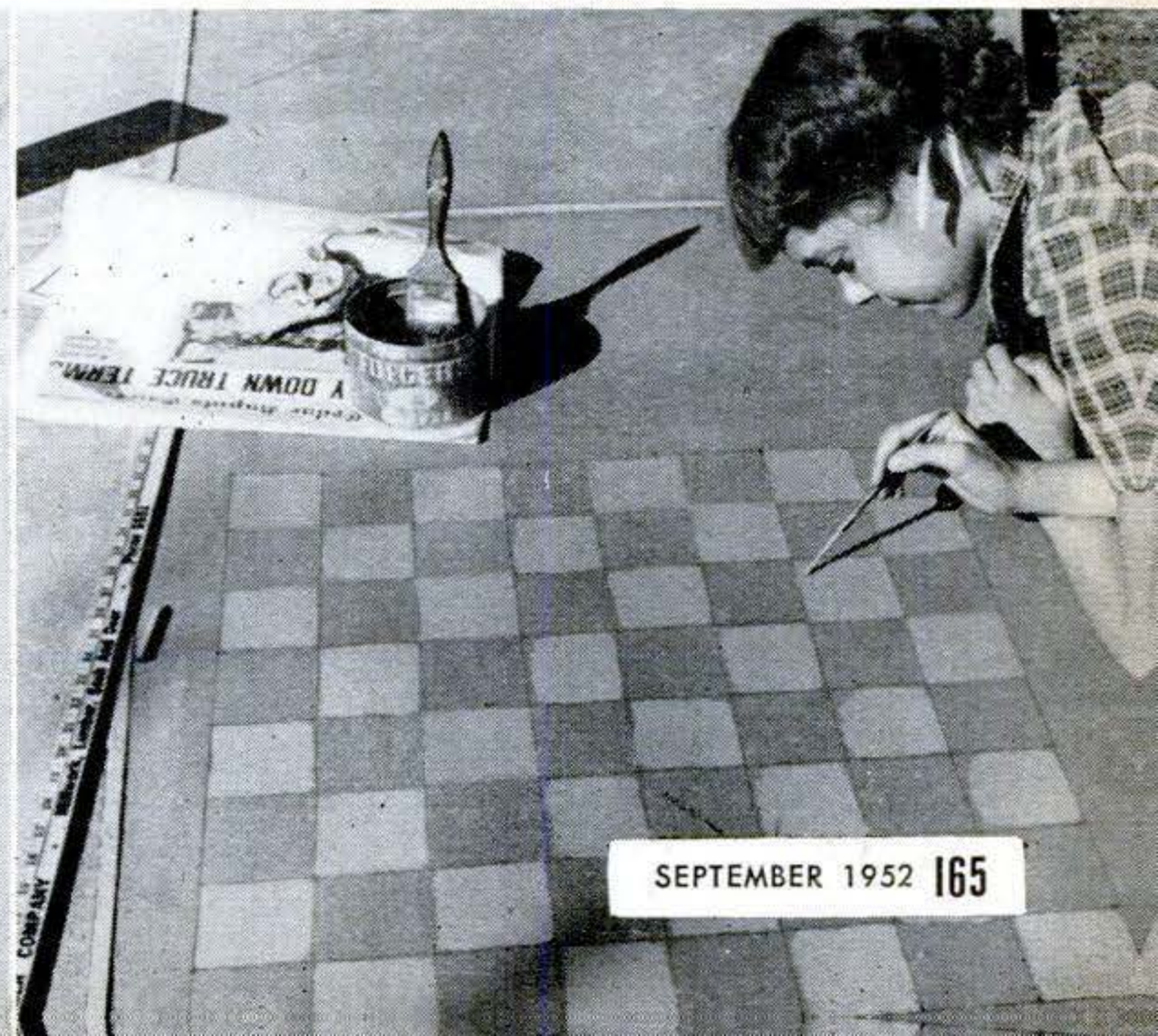
The wood dividers also act as expansion joints. All the form lumber can be ordinary nominal-inch-thick stock. If fairly sharp curves are wanted, the lumber must be

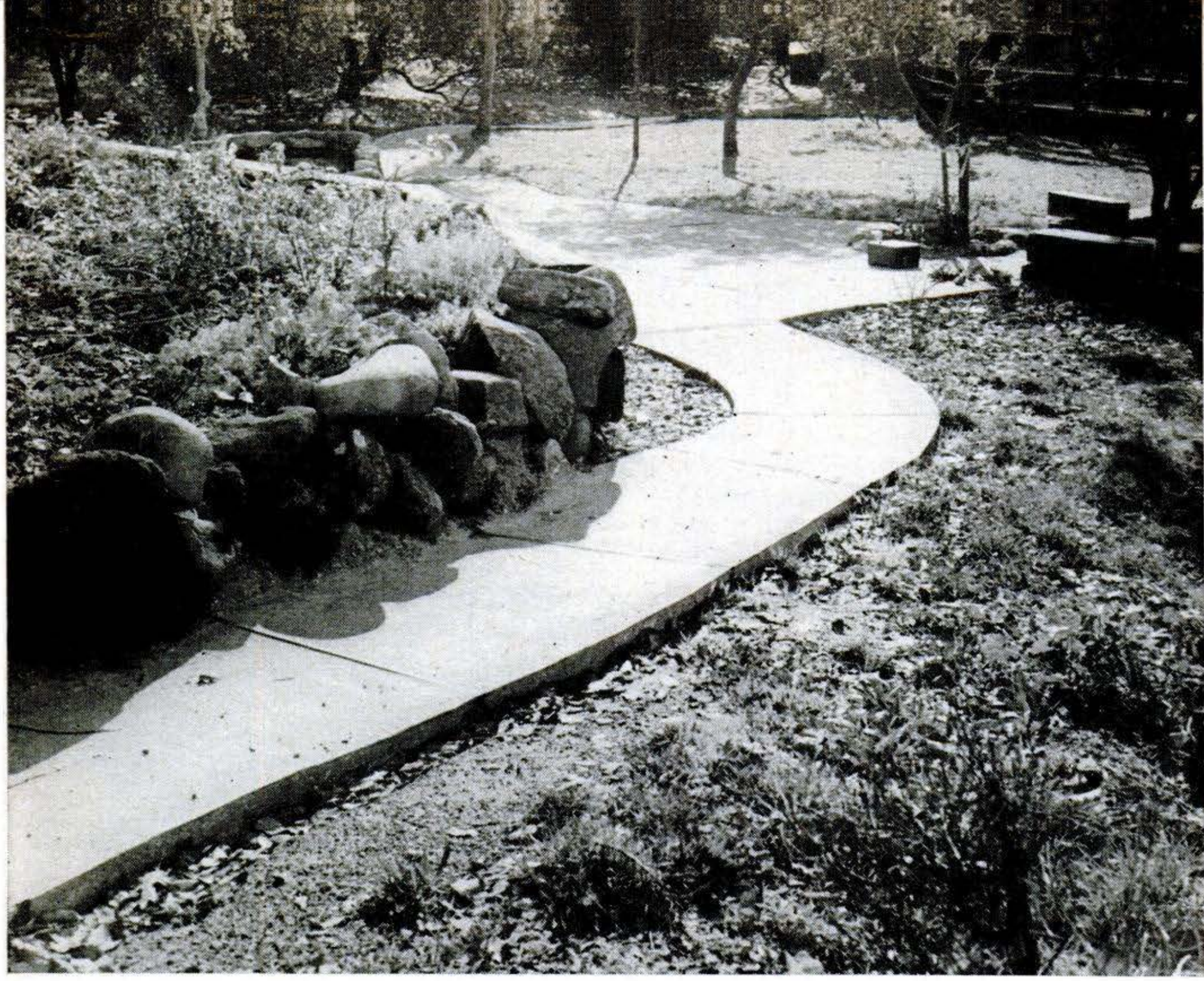
GARDEN RAKE spreads the concrete. Use of small squares makes it easy to interrupt work and begin another day without a bad joint.

BOARD serves as screed, or strike, to level wet concrete with tops of forms. Board is moved back and forth across forms at same time.

BROOM adds texture to concrete. This is done several hours later when broom will barely roughen surface. Parallel strokes are used.

FINISHED CONCRETE can be painted to make an outdoor game room for checkers, hopscotch, shuffleboard or whatever you like.





Paved paths are mudless communication routes between our house, pool and kids' play area.

thinner. For a walk-and-terrace job, you can use ½" lumber of the cheapest grade and get quite strong curves. I used redwood because it's cheap where I live and will last a long time.

Fir or pine will decay soon, but that's all right. When the strips go, push in a little topsoil and encourage grass between the blocks of concrete. Or leave the openings.

And finally, we *don't* pour a slab 4" thick. We can get away with making it only half that thick because our job consists of such small units.

So there is the economy: only about half the usual amount of cement and gravel to buy, only half the mixing and carrying to do.

We found it simplest to make concrete in a small mixer powered by an electric motor. Such mixers are widely available for rental by the day.

You simply rent a mixer, have sand and gravel and some sacks of cement delivered, and pitch in. Your mix consists of one shovelful of cement to five or so of the half-and-half sand-and-gravel mixture, plus enough water to permit thorough mixing and easy handling. If you get your proportions a little wrong your concrete may not meet professional standards—but you'll still get good garden paths.

Even in the final step we avoided almost entirely one of the bugaboos of amateur cement workers: troweling to a fine finish. We merely rough-troweled to a sort of semi-finish that is easy to get, and then broomed the surface. The result was a lot of labor saved and a surface that is neat and attractive. And there's an extra dividend—the broomed surface is practically slipproof whether wet or dry. END

Next Month: What you can do to make sure your water pipes won't freeze this winter.

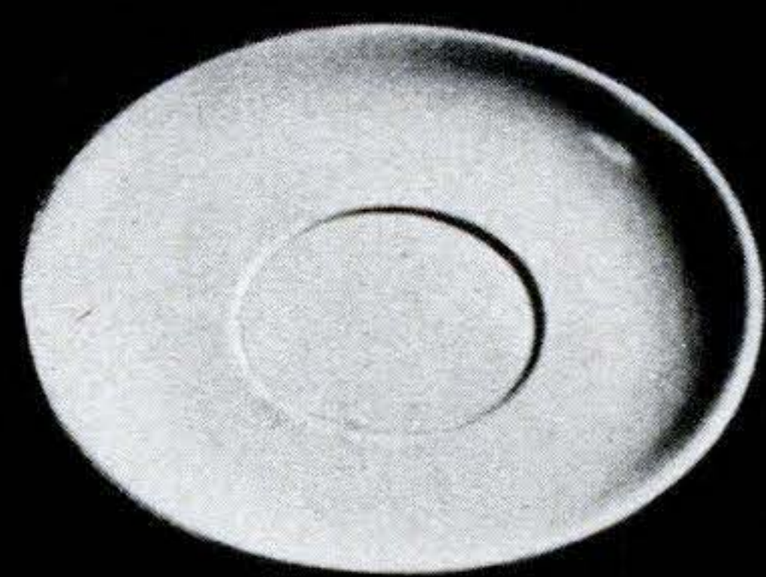
Workshop Wisdom

Much missed is the laughter of Muckles,
A lathe hand once given to chuckles,
Till he had a yearning
To stop a chuck turning
By deftly inserting his knuckles.

Copyrighted material

Kenneth Swezey Shows You

How to See Flying Saucers



Can you guess which of these kitchen saucers was farthest from Ken Swezey's camera and which nearest when he made this trick picture? Here's a tip: the photo was shot to demonstrate that unless you know the size of an unfamiliar object outlined against the sky, you can't judge its distance, and until you know its distance you can't possibly judge its speed. After making your guess, turn to the end of the story to see the answer.

Kitchen-table tricks suggest that those strange sights in the sky may be just optical illusions—and nothing more.

YOU don't have to stay up all night sky-gazing to catch a glimpse of some flying saucers. You can see them right in your own home, using just a milk bottle filled with water, a flashlight and a few other common gadgets.

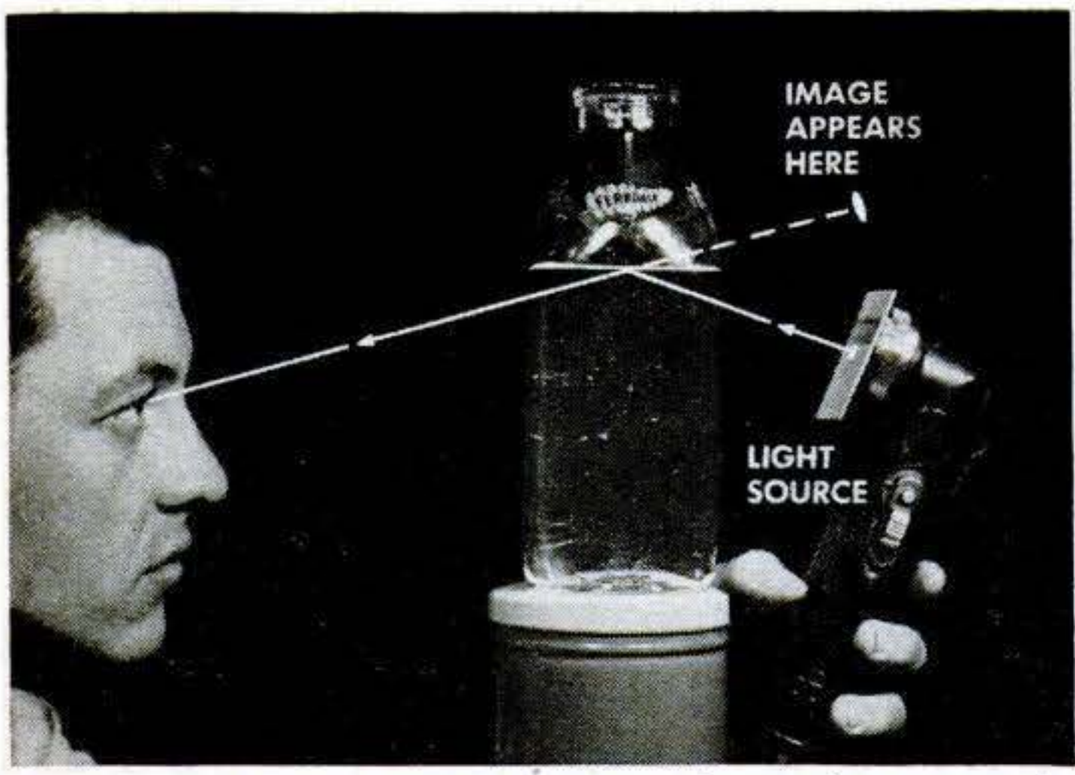
Flying saucers that cannot be accounted for as pure hoaxes or as misinterpretations of known objects are not *necessarily* spaceships or missiles from another world. Dr. Donald H. Menzel, professor of astrophysics at Harvard, declares that they may be mere optical illusions—akin to mirages and rainbows—projected into the sky by tricks of light. You can duplicate these tricks on a small scale.

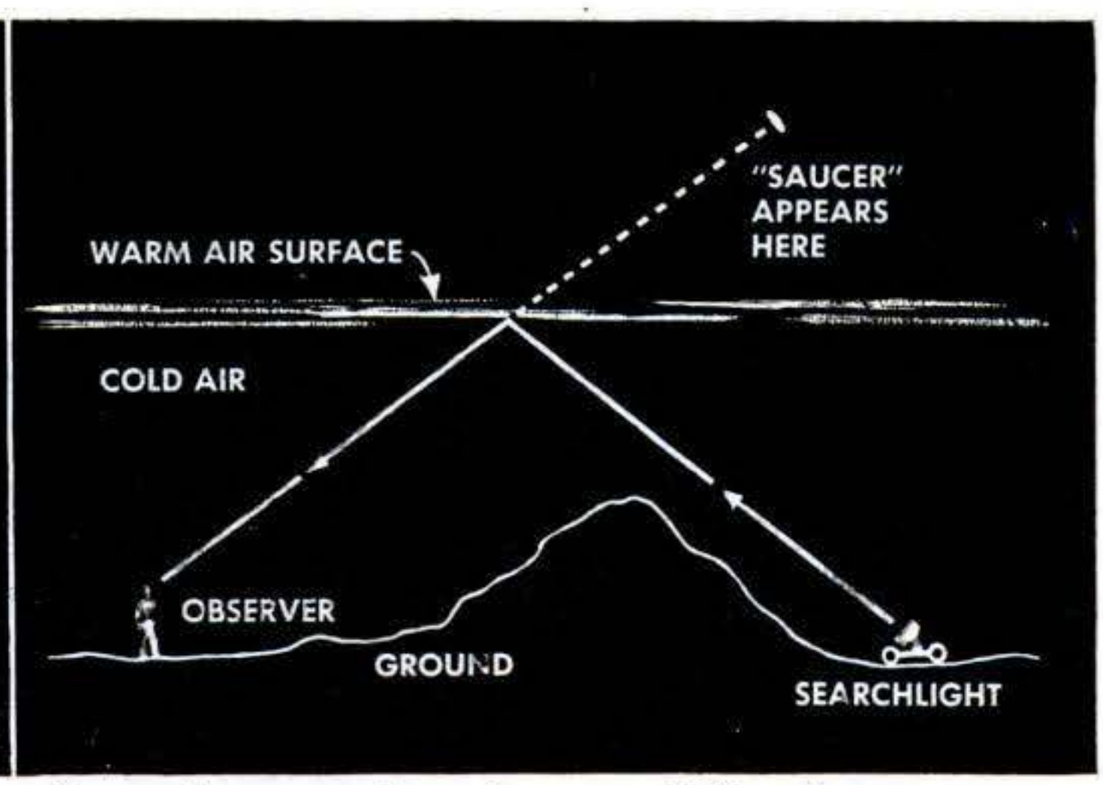
In some cases, the sky phenomena may originate as automobile headlights, searchlights or distant street lights. Striking a layer of warm air above, the rays from these sources are bent downward toward the earth. To an observer on the ground, this bending of the rays makes the light source seem to be overhead.

In other cases, a pilot flying above a warm layer of air sees the light from the sun, a planet or a brightly lighted cloud bent upward. Such a light seems below him. The ghost light might seem to move if its source—or the observer or the layer of warm air—moves.

Flying saucers are probably seen most frequently over desert areas because the atmospheric conditions necessary to produce these strange mirages are most common there. During the day, the air and the

Copyrighted material





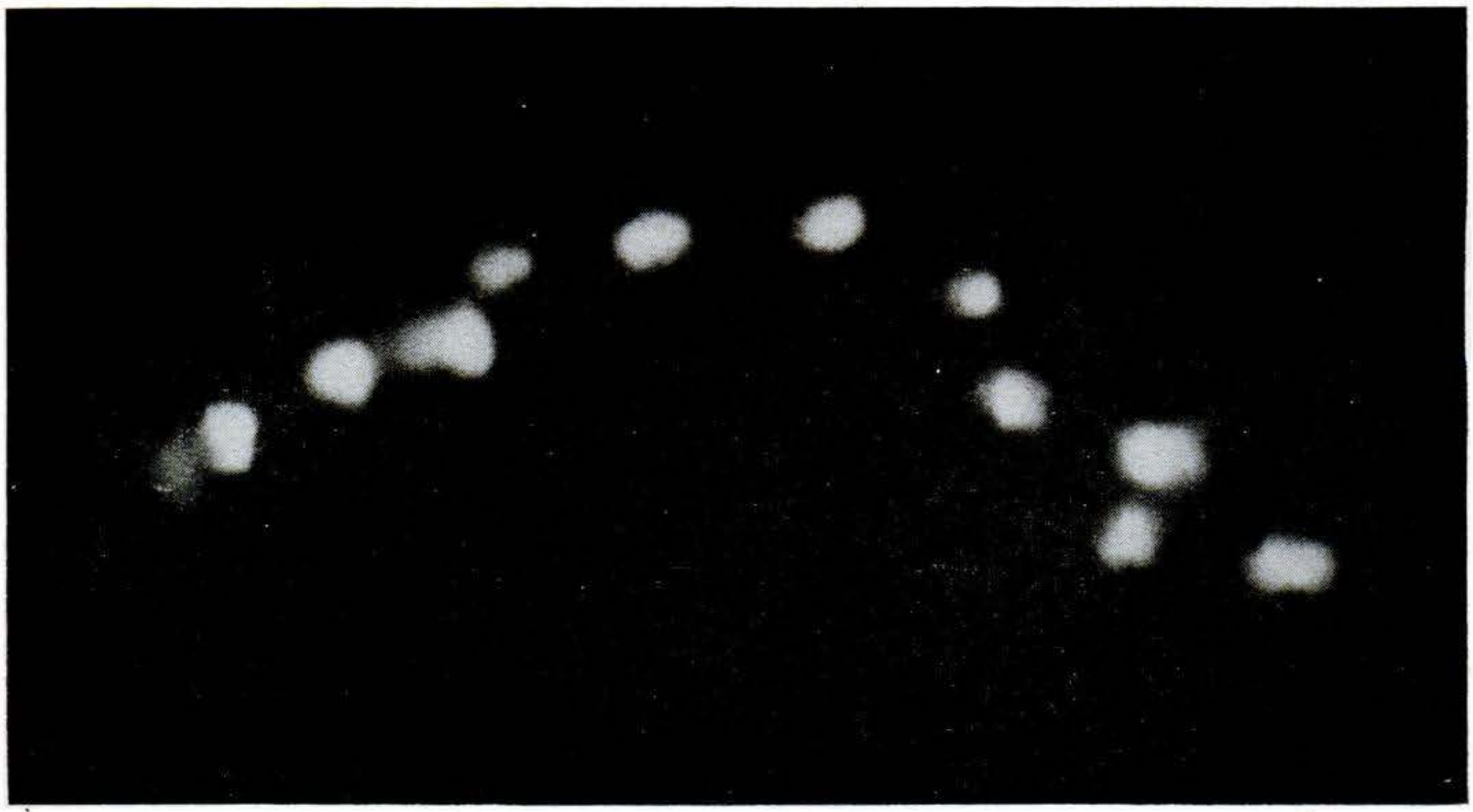
You might see flying saucers from the ground as demonstrated here. A square milk bottle containing water is supported high enough so that you can see the underside of the water surface. The beam from a ¼" hole in cardboard covering the flashlight, aimed at the center of the water surface at an angle from below, is bent downward to the eye of the observer. As a result, the light seems to be coming from above the surface of the water. In the same way, although less abruptly, a warm air surface above cold air could bend back a distant ground light so that from the ground it would look like a saucer in the sky.

ground get very hot. At night, and also under certain cloud conditions during the day, the ground cools rapidly by radiating its heat toward the sky. As a result, the air for a few feet up cools off by contact with the cool earth, but the air higher up stays warm.

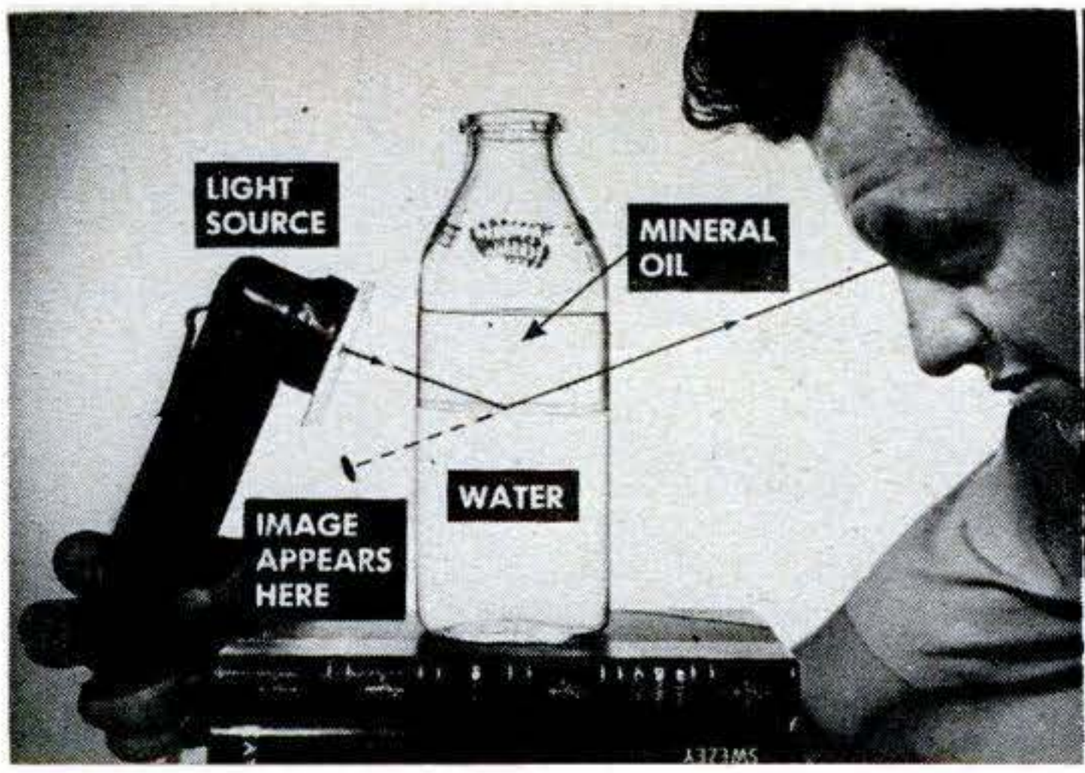
Because light rays travel faster in light warm air than they do in cold dense air, they are bent back into the cold air whenever they strike the layer of warm air at an angle.

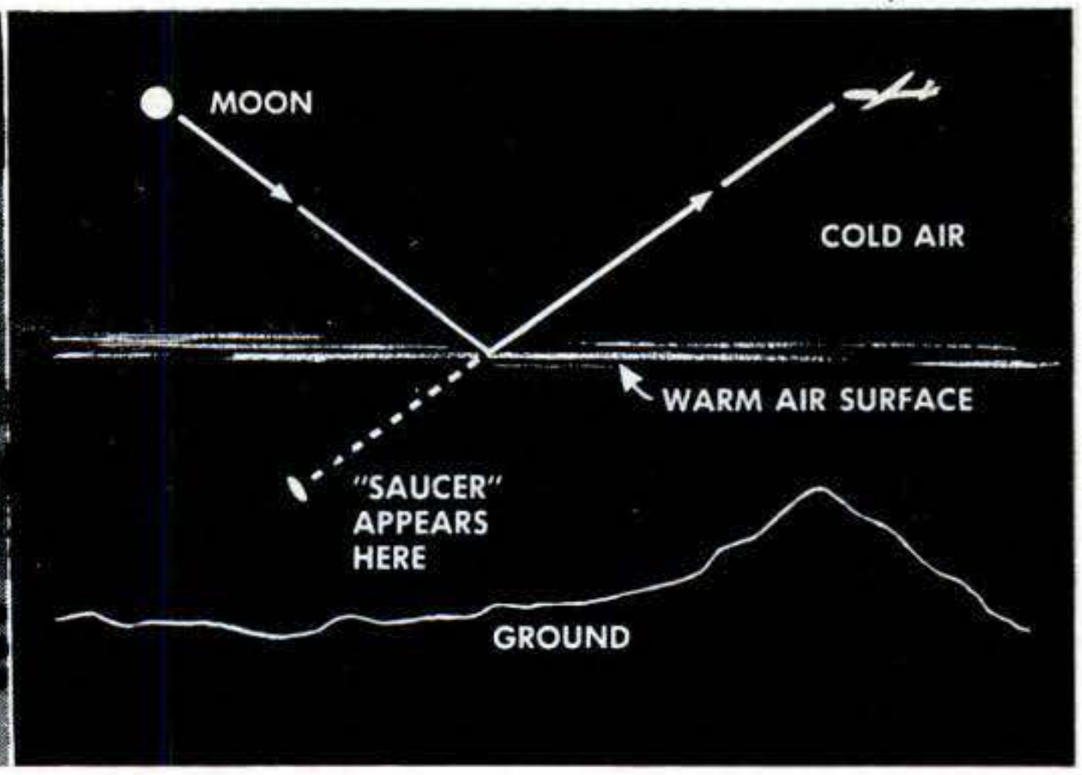
You can't experiment with miles of atmosphere in your home, but you can show the principle by substituting water for the cold dense air and ordinary air for the warm light air, as shown by the illustrations on these pages.—*Kenneth M. Swezey.*

Duplicate of the Lubbock Lights was photographed by Swezey with the milk-bottle setup shown at top of page. In this case, a pattern of pinholes was punched in the cardboard covering on the flashlight. Dr. Menzel claims that the flying saucers photographed in the Texas city were probably ghosts of distant street lights turned down by a warm air surface as explained above. Undulations in the surface made them move. Lights viewed through a milk bottle can be made to dance around by jarring the bottle. But how a mirage like this could make such lights travel across the sky has yet to be explained by the experts.

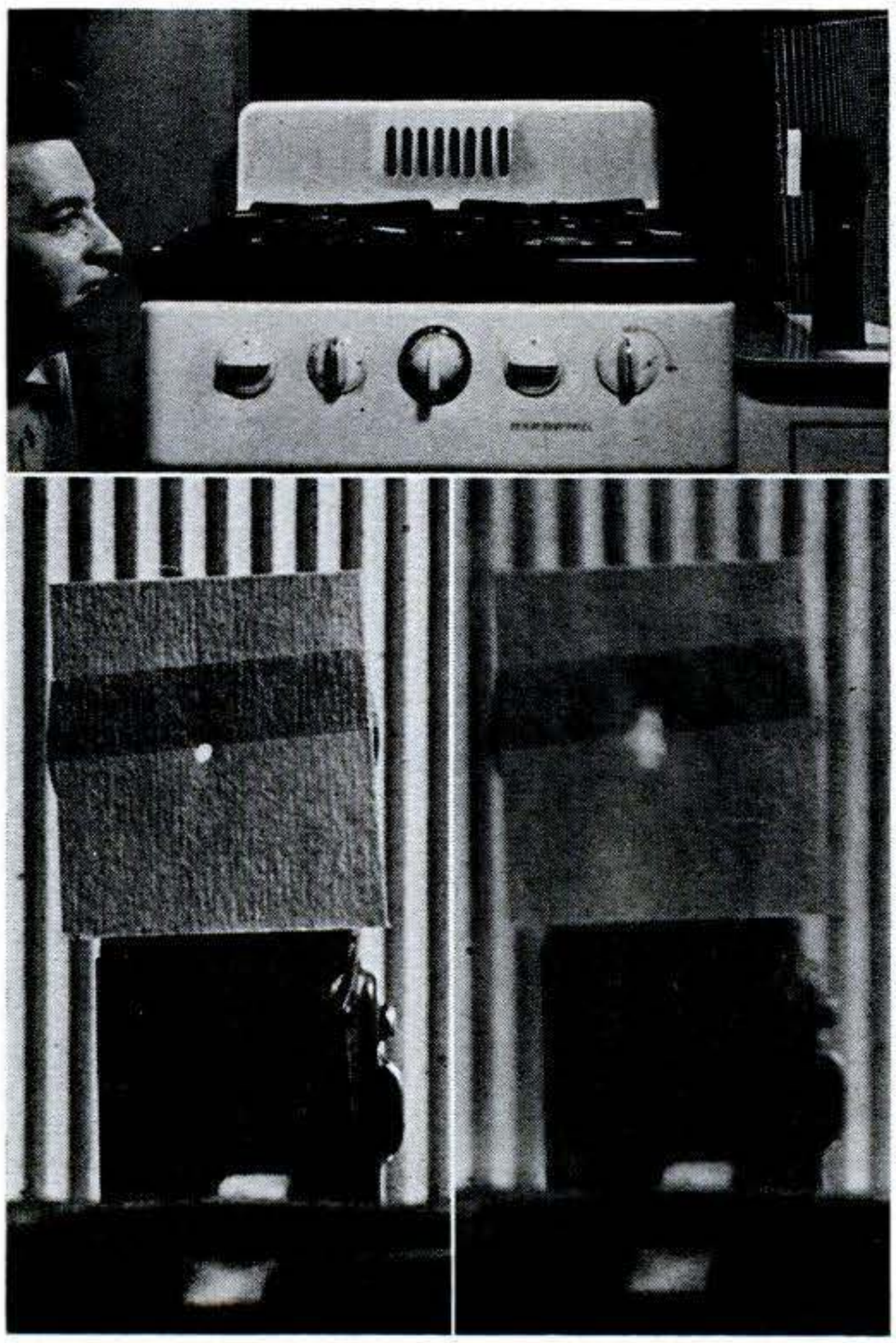


Copyrighted material



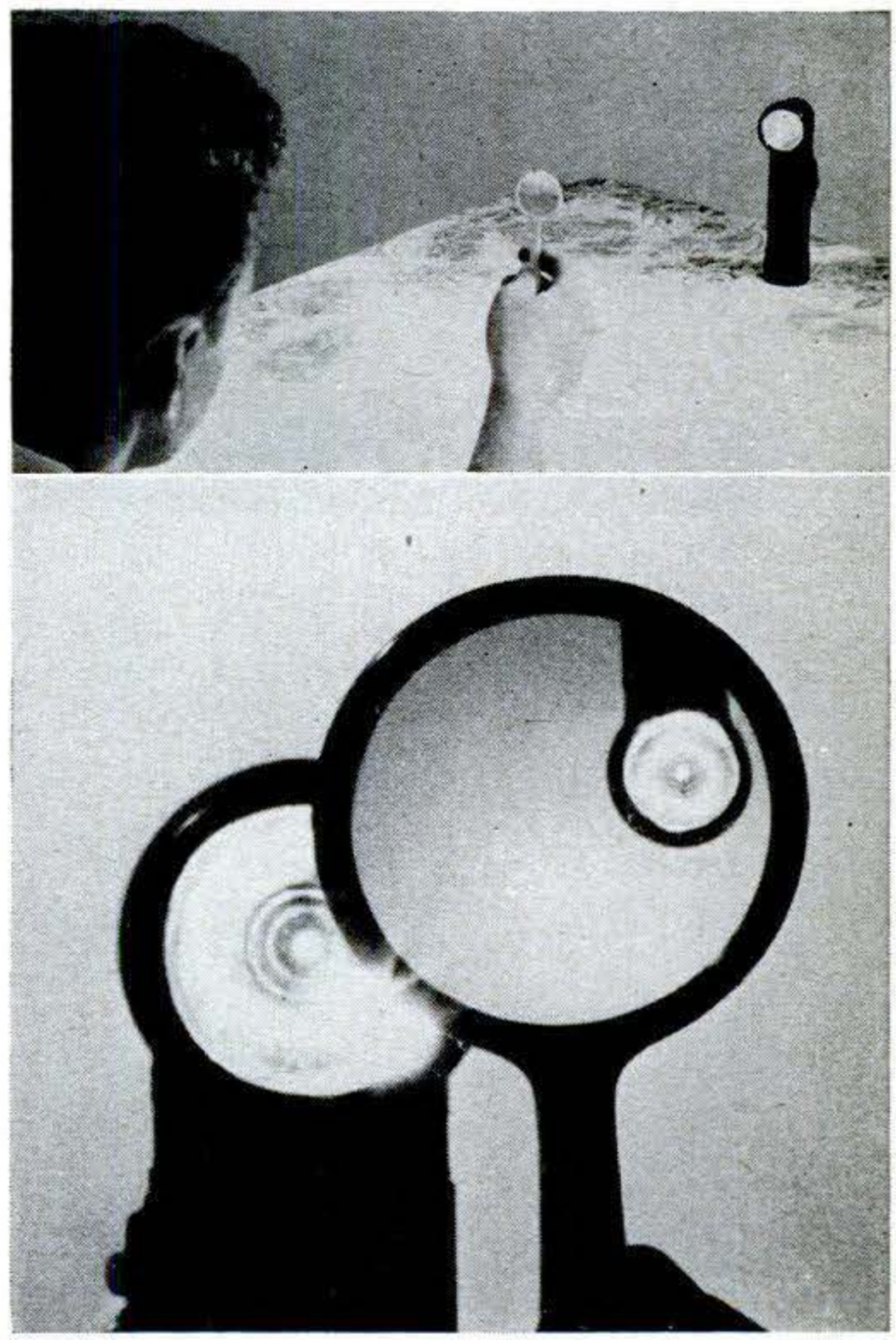


From a plane flying in cold air above a layer of warm air, you might see saucers below you this way. In this case, less water is put into the bottle and a layer of mineral oil is then carefully poured on it. Mineral oil bends light more than water does. When the flashlight beam is viewed as shown in the photo it seems lower than the reflecting surface.



Fluctuations in air density distort light waves. To see this, stand your masked flashlight on one side of a gas range and sight across the unlighted burners as the top photo shows. The lighted hole and background will be sharp and clear, as at lower left. When you light the gas, the waves of irregularly heated air bend the light waves, distorting them as at the right and causing the light to seem to blink on and off and move around.

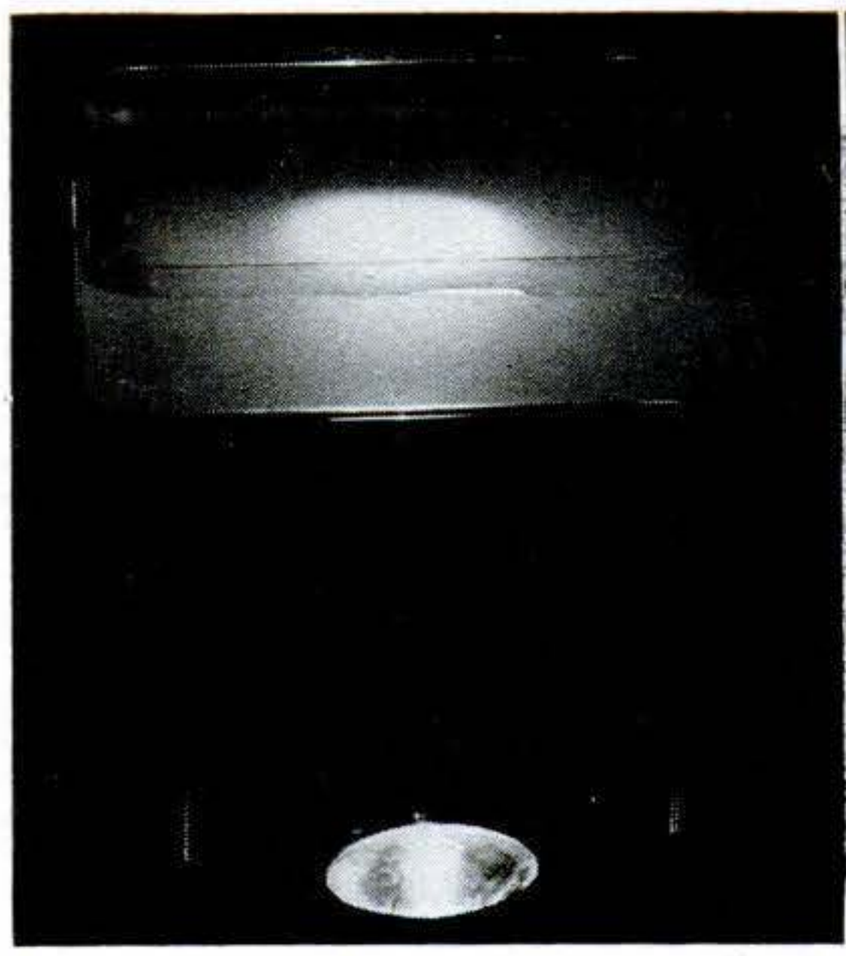
Rapid fluctuations in a warm air surface could also explain why "saucers" seem to dart about. Moreover, irregularities in the reflecting surface might produce extra images from a single source of light.

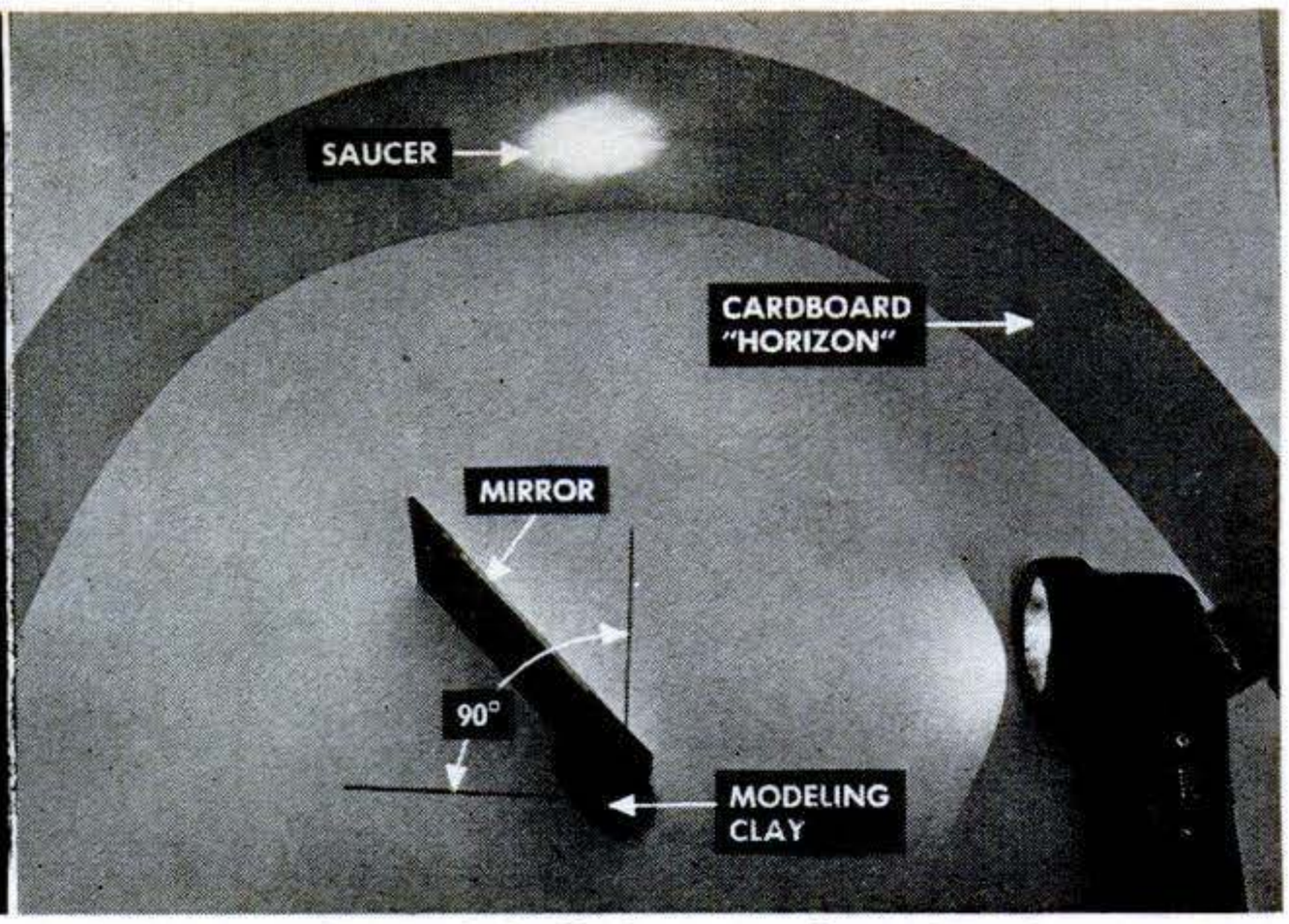


A lens theory may explain saucers seen darting around at great heights after launching of weather balloons. This theory pre-supposes a layer of warm air sandwiched between two cold layers. Rising balloon punches hole through warm layer, allowing cold air from above to flow into hole and forming a sort of imperfect lens. By holding a small magnifying glass at arm's length toward flashlight, you can see what then happens. Through the glass you see a small image of the light. In the balloon case, the air lens also forms image of balloon. Being smaller, it seems much farther away than the balloon. Changes in the lens shape could cause image to dart around.

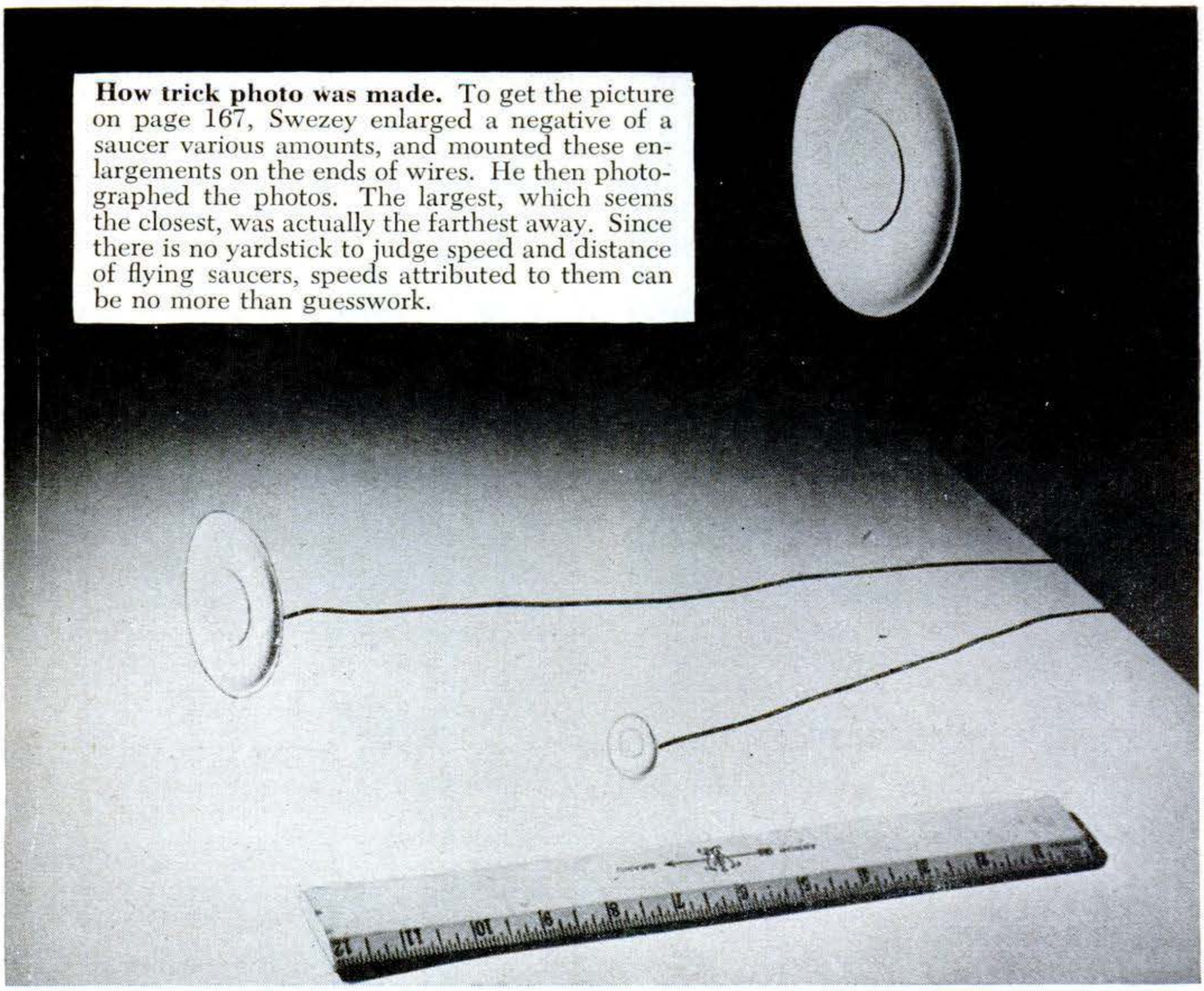
Please turn the page for more on saucers.

Copyrighted material



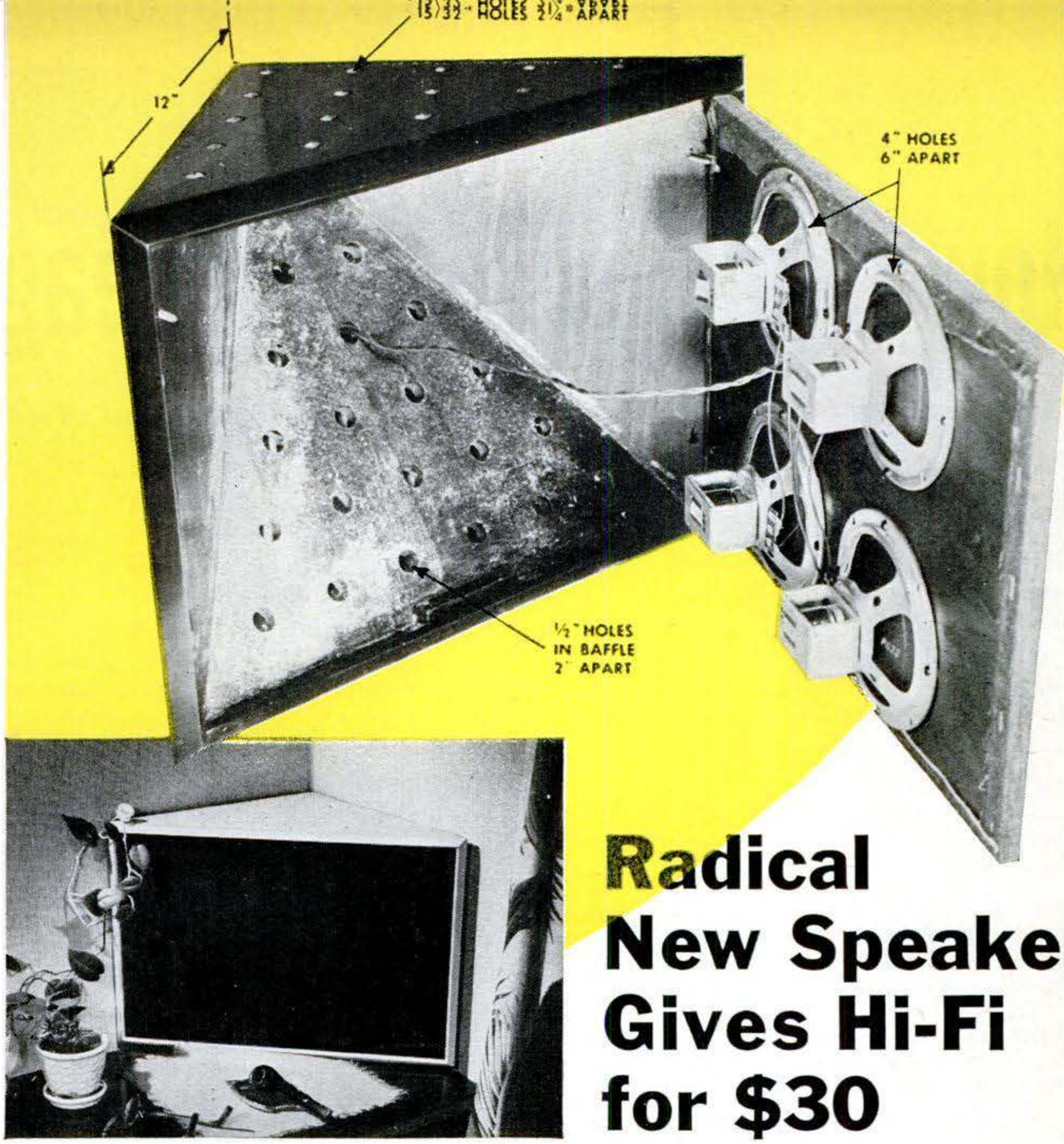


A searchlight beam lights up clouds and dust layers because they reflect and scatter the light. The beam itself will be invisible if the air between earth and clouds is clear and dust free. You can see this effect by shining flashlight through bottom of a glass dish containing water to which a little milk has been added (left above). In some cases, what appears to be a flying saucer might be merely a searchlight or headlamp beam sweeping across a cloud layer at night or a reflection of sun by a mirror or other polished object on layer by day. In both cases, the light could cross sky in a fraction of second. A mirror or other reflecting surface could send a beam through the whole journey by moving only half as much as the original light source. The above setup shows how this would work. The "horizon" is a semicircular strip of cardboard set on edge. By rotating the mirror through only 90° you can cause the reflected light to move from horizon to horizon—or a full 180°.



How trick photo was made. To get the picture on page 167, Swezey enlarged a negative of a saucer various amounts, and mounted these enlargements on the ends of wires. He then photographed the photos. The largest, which seems the closest, was actually the farthest away. Since there is no yardstick to judge speed and distance of flying saucers, speeds attributed to them can be no more than guesswork.

Copyrighted material



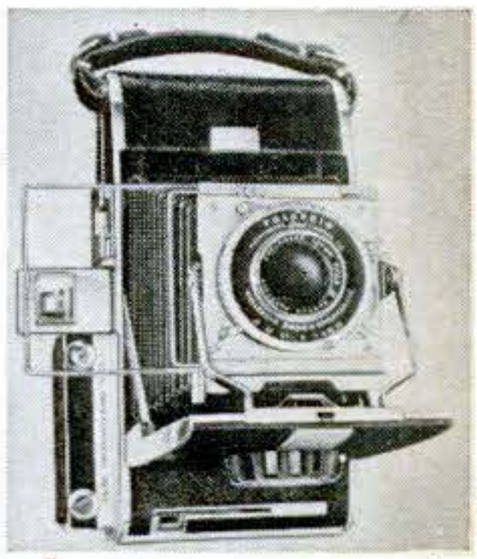
Radical New Speaker Gives Hi-Fi for $30

JUST by drilling holes in the cabinet, two sound engineers have made an acoustic unit using cheap, small speakers sound as good as a costly big job. The holes do the trick by "tuning" the cabinet and baffle to compensate for inadequacies in the four 5″ speakers. Calculating the hole size and spacing was so complicated that an electronic computer was used to figure it out, report the inventors, Dr. Jordan J. Baruch and Henry C. Lang of Massachusetts Institute of Technology.

Dr. Baruch and Lang say that their unit, with two watts of amplifier output, reproduces the tonal range and volume of a full symphony orchestra. It is said to be "flat" (accurately imitating the original loudness) over a frequency range of 40 to 11,000 cycles, which covers most tones audible to the human ear.

The Baruch-Lang speaker, small enough to fit on an end table, promises to bring out the full quality which is inherent in FM radio and TV sound, but which now is often distorted by inadequate speakers. It will be marketed by Ultrasonic Corp., Cambridge, Mass., for less than $30.

Polaroid Camera Improved



REFINEMENTS have been added to the Polaroid camera to suit press photographers and advanced amateurs. These include a 5″ f/4.5 Raptar coated lens, speeds from one to 1/400 second, a coupled range finder, a combination optical and frame finder, and flash synchronization. The new Pathfinder uses the same film as the regular Polaroid Land camera, delivering a print in a minute. Price: $249.50.

Copyrighted material

How to Measure Gas Mileage

In this rig, a peanut-butter jar feeds a measured amount of gas—

By E. F. Lindsley

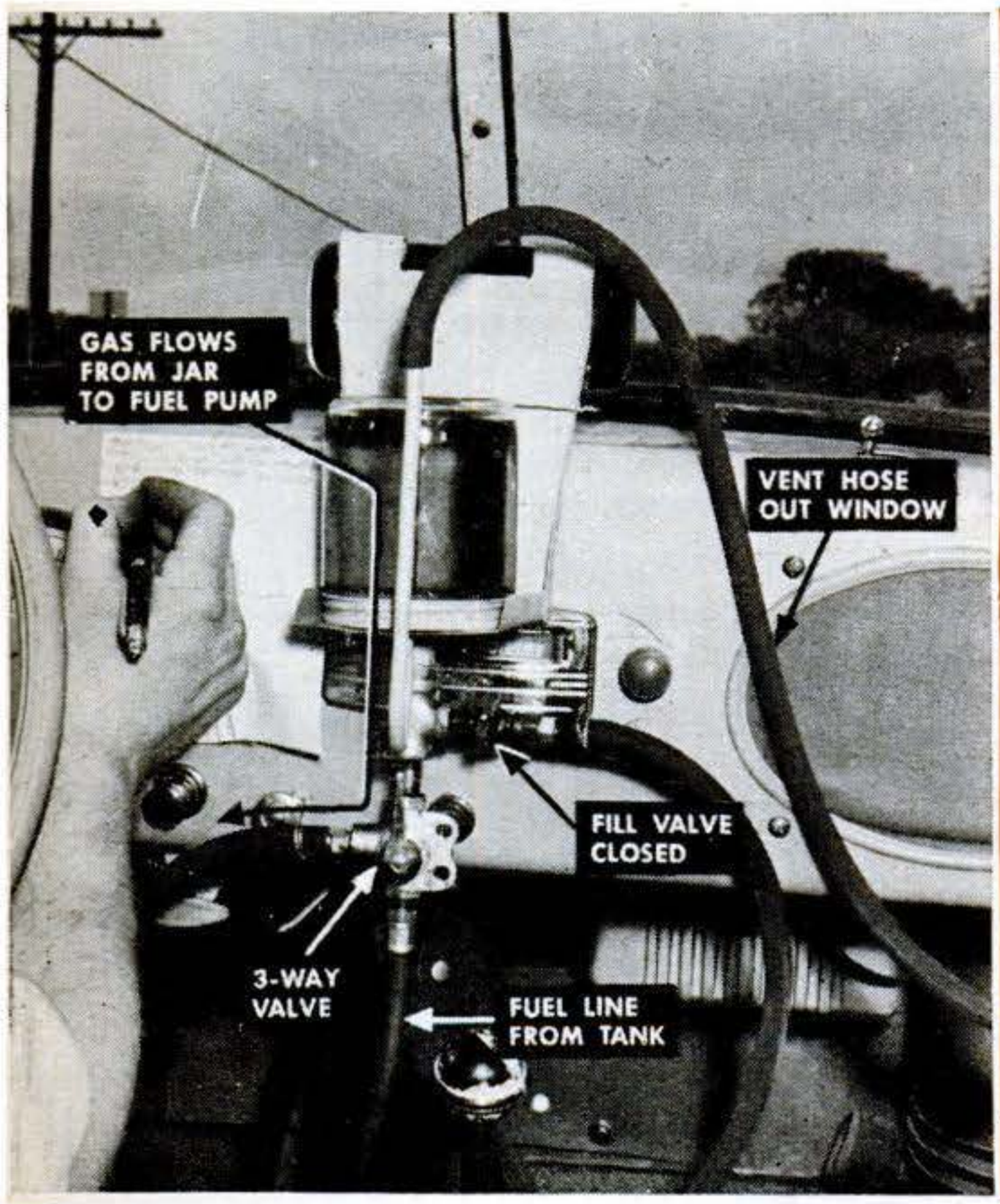
FREQUENT visits to the filling station were giving me the feeling that my car was not living up to the rosy picture of many miles and few gallons promised by its manufacturer. So I built a little mileage measurer to give me the dope, right from the mouth of the carburetor, on how much gas I use to go how far.

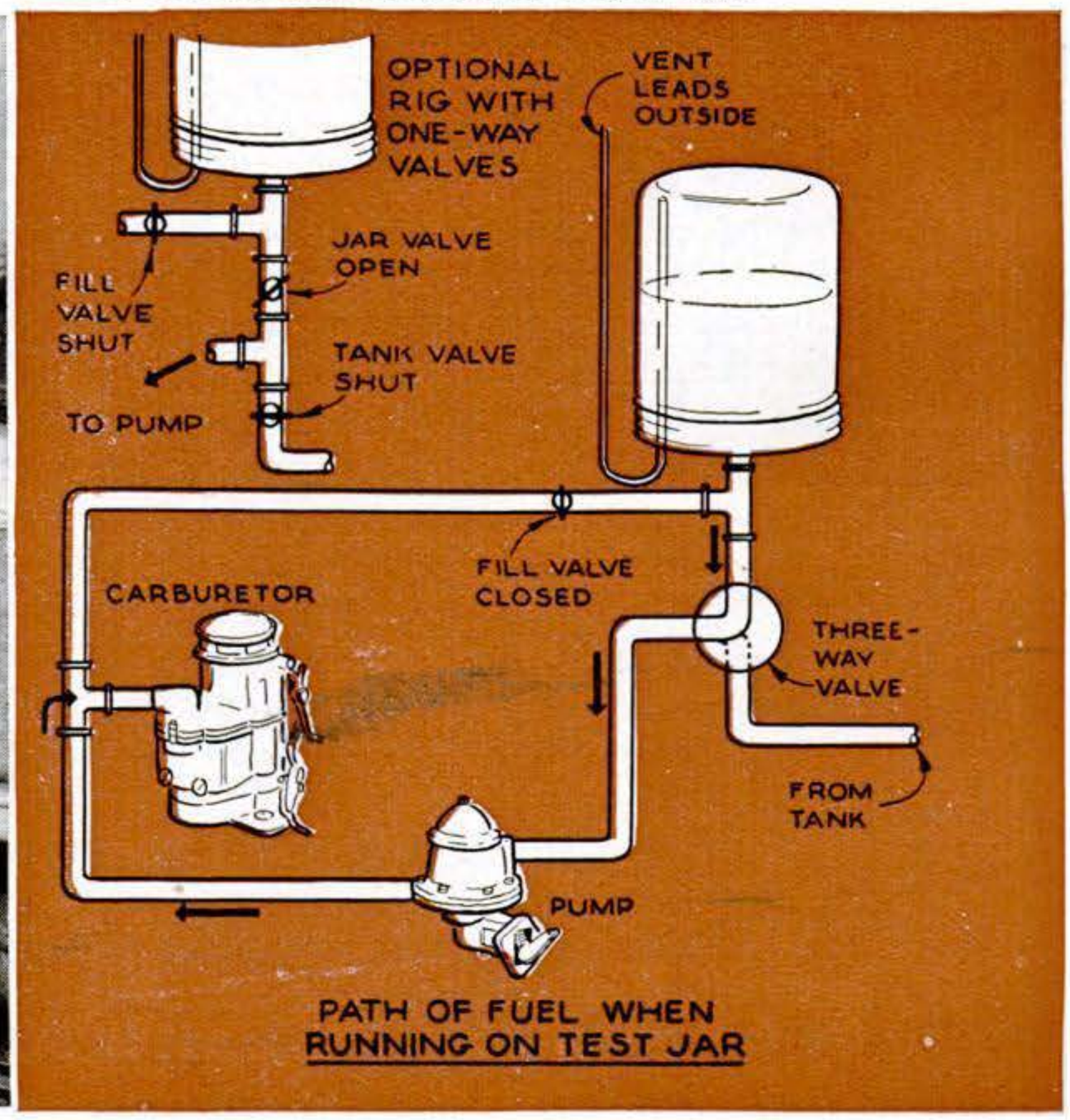
Conventional mileage checks, attempted by topping the tank and recording the miles to the next topping, are often wildly wrong. Operating conditions, including traffic, wind, stops, road surfaces and varied engine temperatures, introduce enough variables to make two and two come out to three. Other sources of error include tilt of the ground at the gas pump, spillage, and "blown-up gas" bought in midday heat.

A special test rig is the answer. It lets you make controlled short runs, avoiding abnormal road conditions, and it eliminates human or mechanical errors at the gas pump. But a simple gravity-feed measurer—a jar that drains into the carburetor—doesn't really do the job right. The carburetor float valve behaves differently against a random gravity head than it does when bucking fuel-pump pressure.

You need a rig that feeds the carb through the fuel pump so that the test par-

BEGINNING OF TEST. Writer notes mileage on pad after filling the measuring bowl. Hose from vent tube runs out window to carry off fumes and possible overflow of fuel that occurs if fill valve is not closed at moment jar is full. Vent hose also admits air as fuel is pumped out. Gas fumes can be dynamite, so make all connections snug, and don't smoke during test. Jar lid should have heavy gasket of cork or neoprene cork, set in gasket cement; don't trust original seal. Vent tube and outlet fitting were soldered to jar top.





Copyrighted material

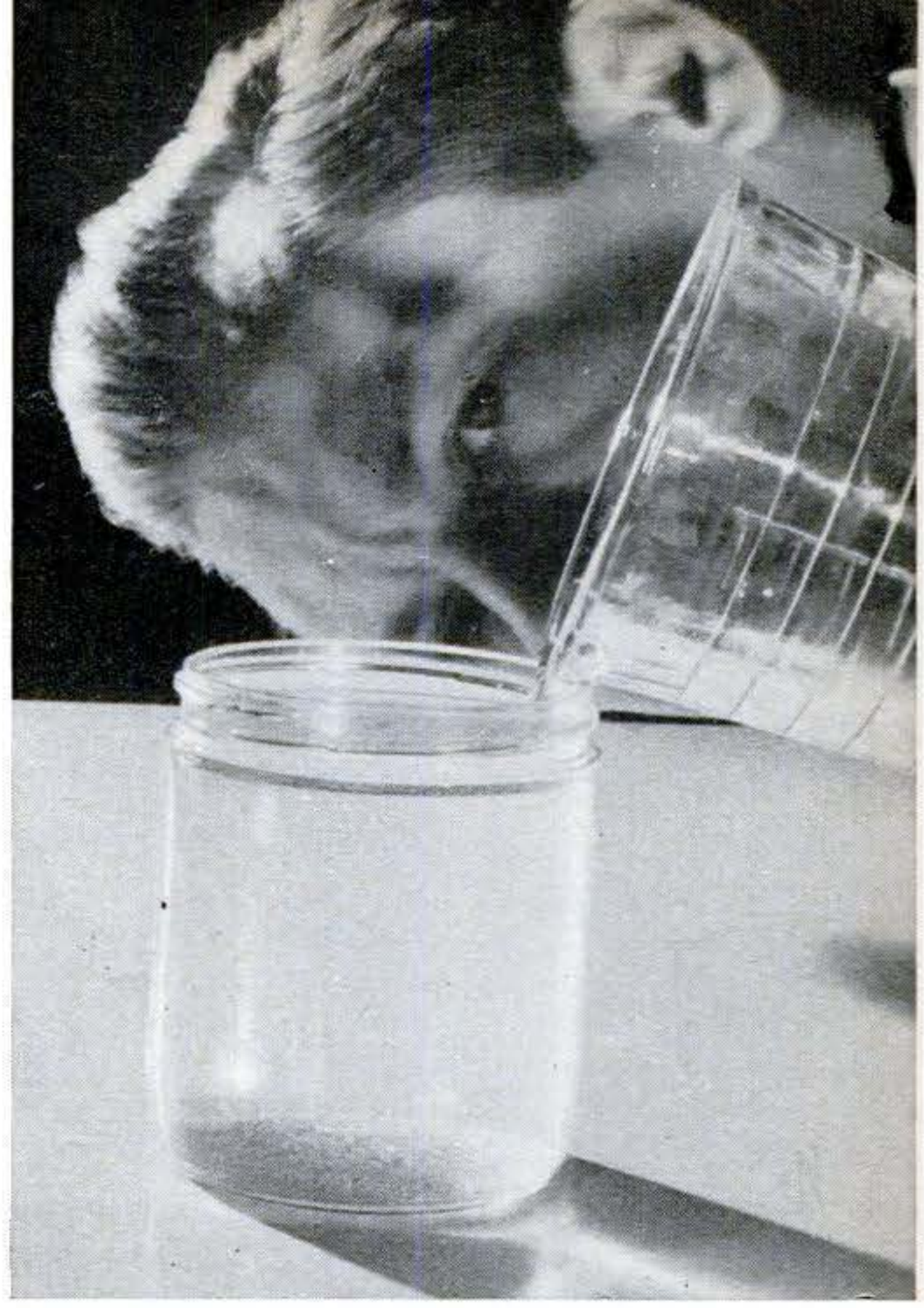
Accurately

and your fuel pump refills it.

allels normal operation. My peanut-butter jar and gas-valve outfit does just that. What's more, the outfit only cost two bucks, and I ate the peanut butter, too.

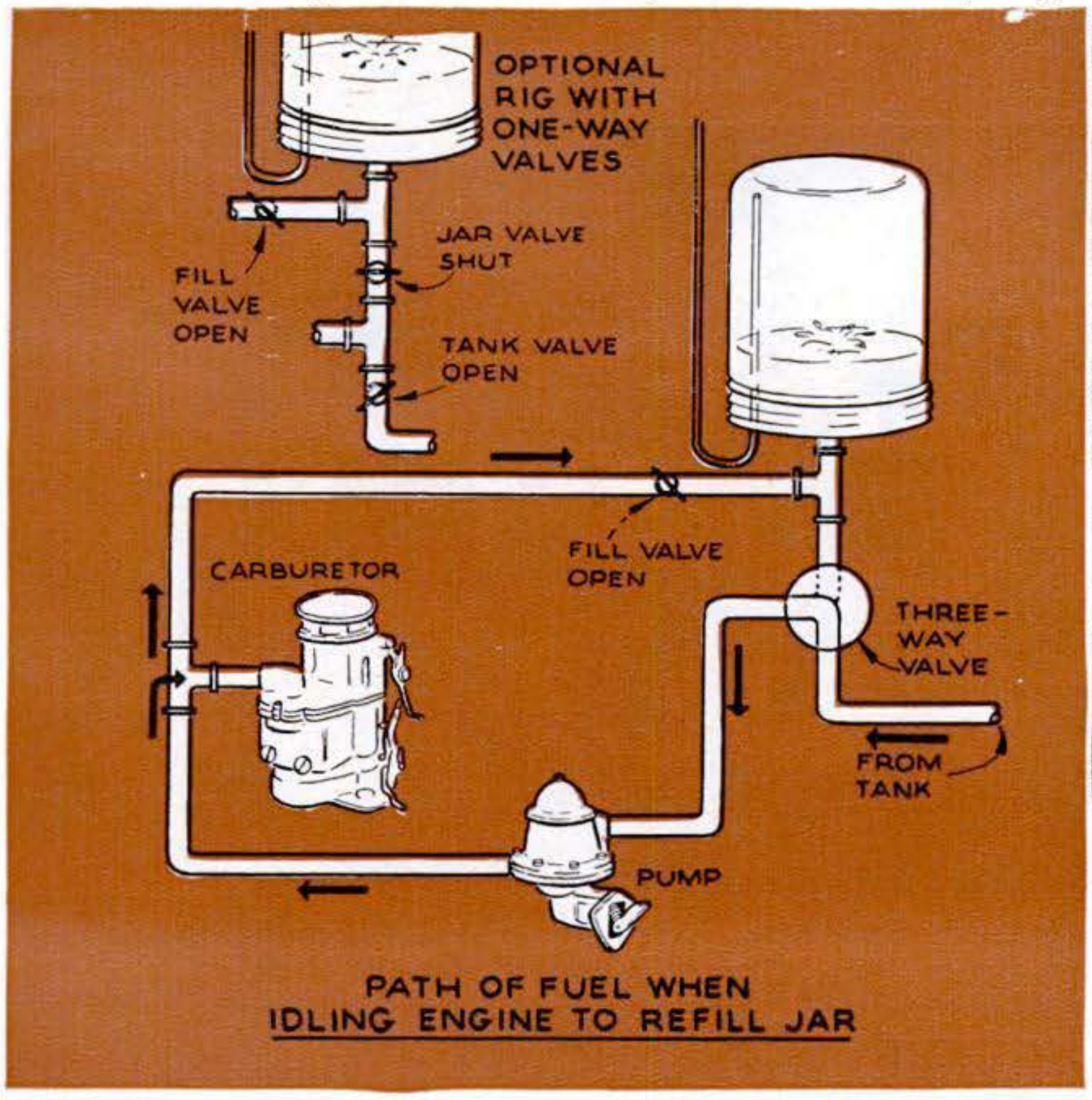
With the measurer to tip me off, I no longer have to kid myself that "This last adjustment will put her right on the nose." It lets me *see* the results of changing the carb jets or timing. It shows up differences in fuel mileage caused by driving habits, speed, tire pressure and even the wind.

The 13-ounce jar comes close to 12.8 ounces (one-tenth of a 128-ounce gallon) when the vent tube and gasket are in place. I fill it to capacity so that I don't have to sight across a calibration line while fuel

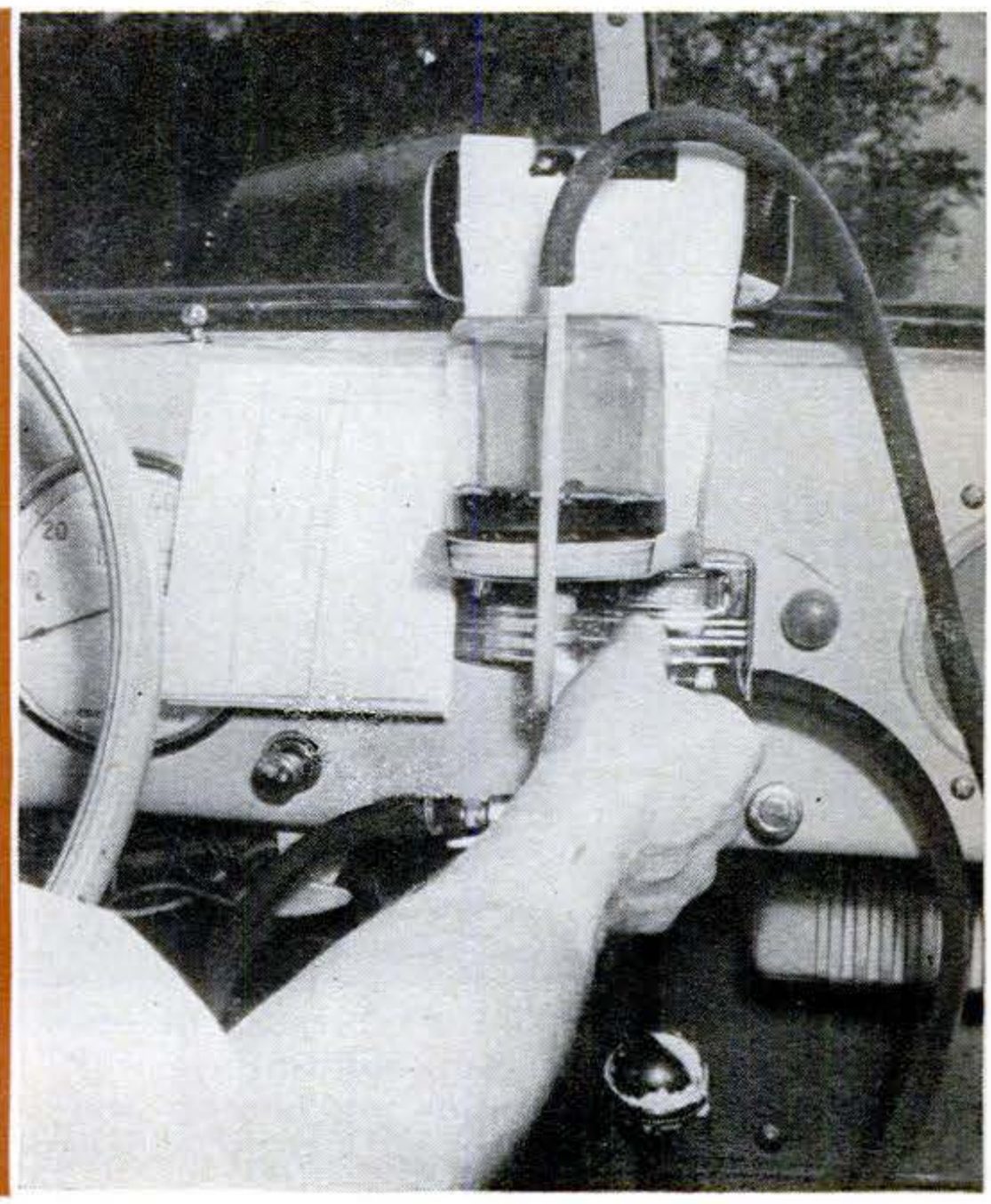


A GLASS JAR WITH SCREW-ON TOP is checked with measured amount of liquid. Peanut-butter jar holds 13 ounces. One-tenth gallon is 12.8 ounces. Air vent, heavy gasket and slight bubble at top subtract difference. Jar is put in rig empty, filled by gas pump.

AT END OF TEST RUN, mileage is recorded just as last drops of fuel run out of jar. It must be done at this instant; driving on gas in hose would make test inaccurate. Three-way valve is then flipped over to cut in main line from tank, and fill valve is opened to let fuel pump refill jar as below. To drive with rig on car, just shut fill valve. Note metal bracket that supports jar. Bent-over tabs hook it to mirror. Use synthetic-rubber windshield-wiper hose for gas lines. A hose that gas softens would clog pump and carburetor.

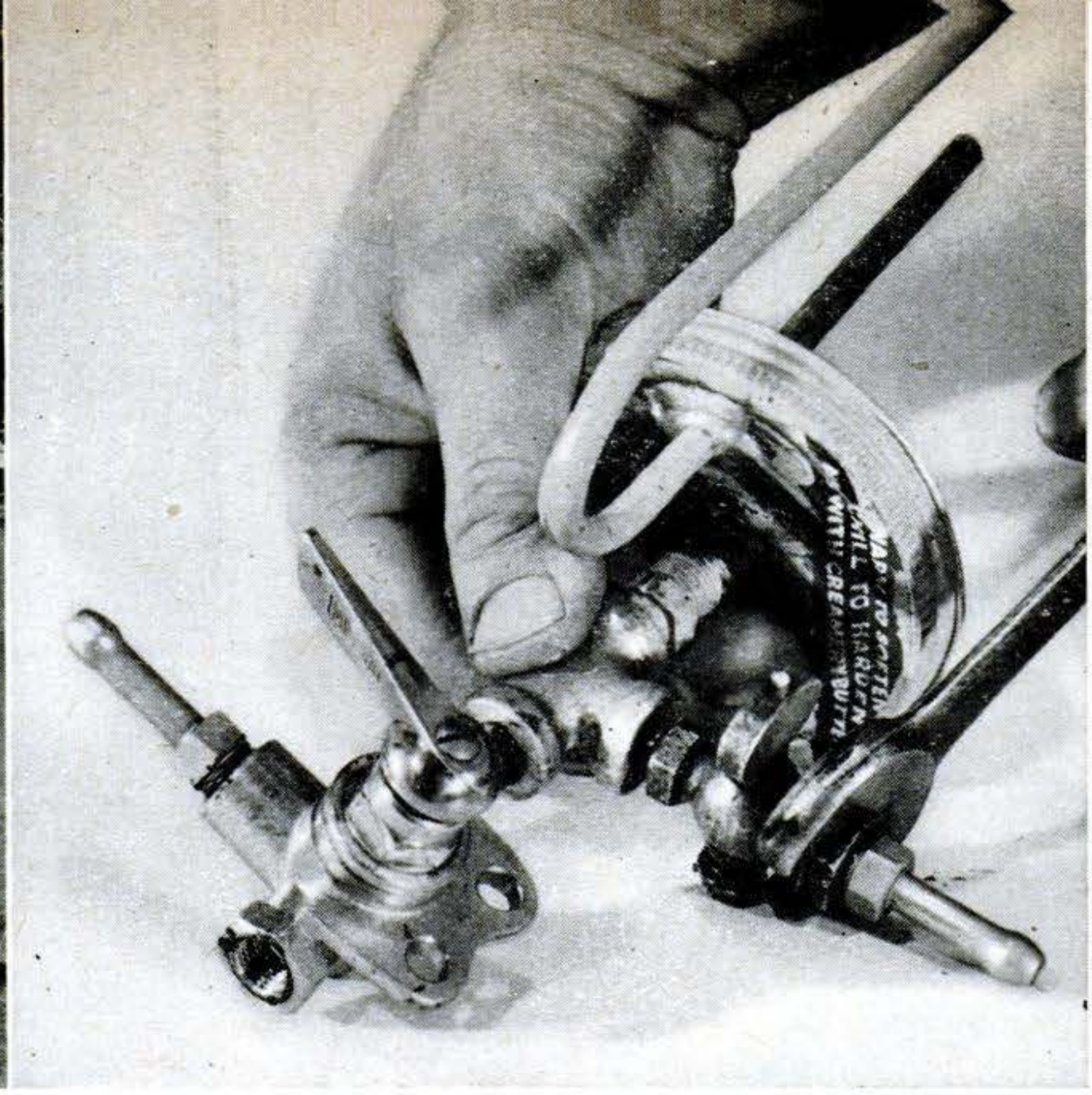


PATH OF FUEL WHEN IDLING ENGINE TO REFILL JAR



Copyrighted material

NOT A GAS THIEF on the prowl—just the writer with gas-measuring outfit ready to install in a car of any make. Hose lengths are not critical since test is stopped the moment last fuel leaves jar.

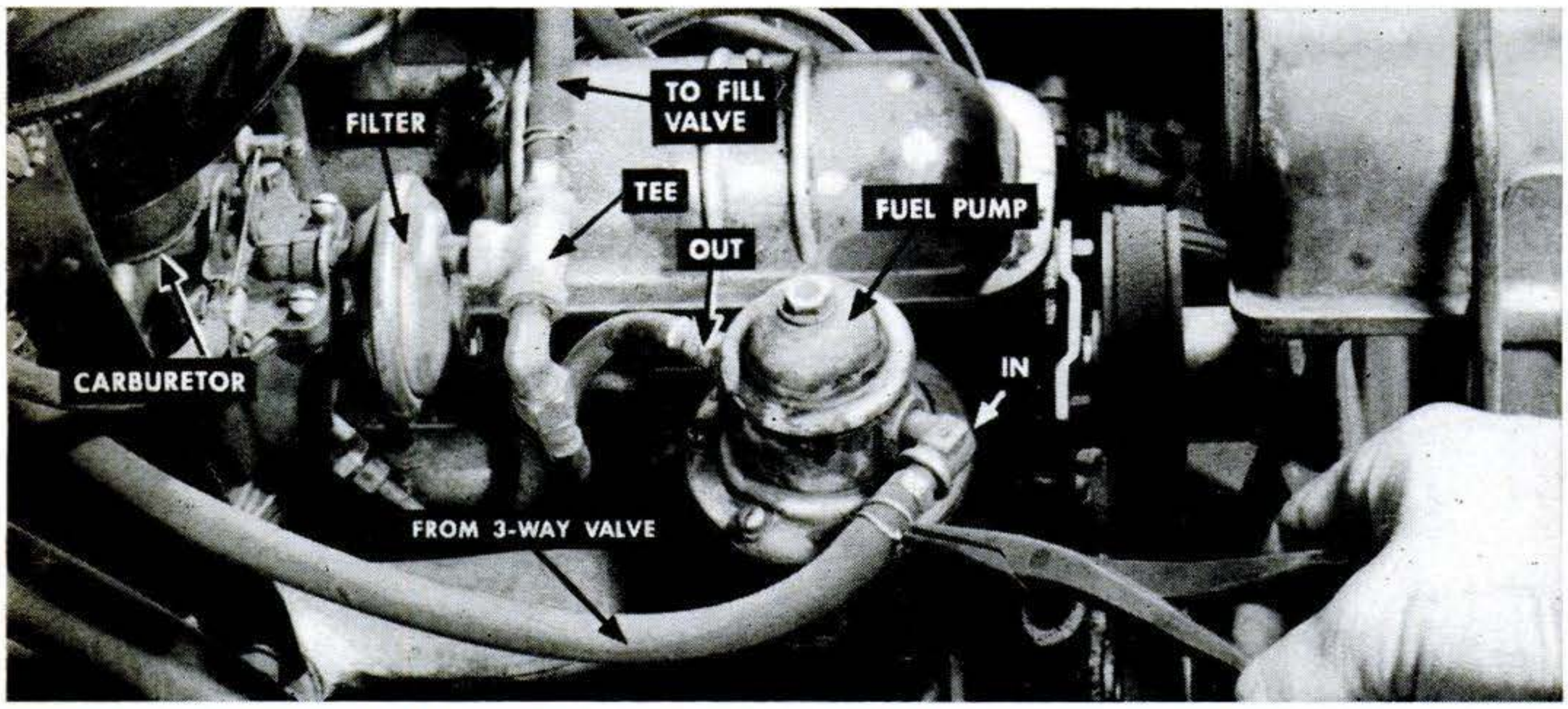


A THREE-WAY VALVE, straight valve, tee and nipple, all ⅛" pipe size, are assembled on the jar cover. If a three-way valve is not available, a tee and two straight valves can be assembled to do the same job. The vent tube should be trimmed so that it barely clears the bottom of the jar. The outfit cost the writer about $2.

is sloshing around in the jar. When I've run it dry, a tenth of a gallon has gone through the carburetor. The miles-per-gallon figure is the measured mileage multiplied by 10. Better yet, you can run 10 successive jars through the pot and take your mileage right from the speedometer.

Obviously, a narrow-necked burette with hairline calibrations, electrically controlled valves and a precision fifth wheel would be more accurate still. But if I can't stake my mileage figure against the Bureau of Standards, neither can anyone else without hundreds of dollars' worth of instruments.

In making adjustments after a mileage check, I generally aim for economy *plus* performance. That's because a too-lean mixture causes burned valves and overheating. END



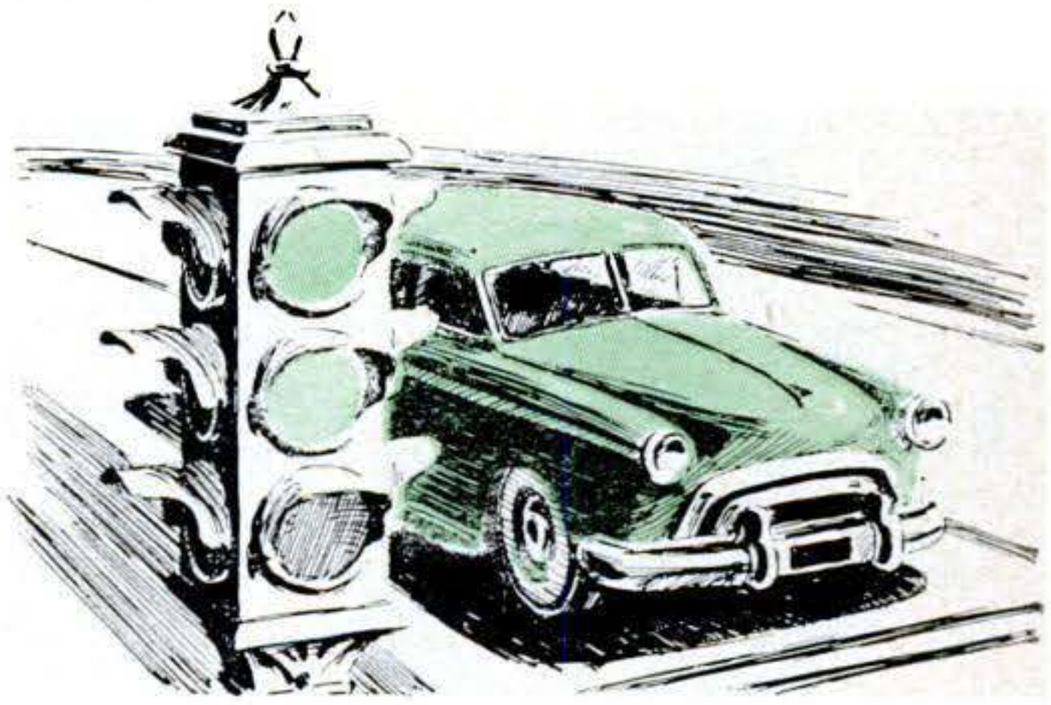
SETUP ON CROSLEY ENGINE is typical. With engine idling, fuel runs from tank to three-way valve, down to fuel pump, out pump and both into carburetor and past it to fill valve, opened to fill jar. When jar is full, fill valve is closed and three-way valve flipped over, cutting off tank. As car rolls, fuel flows from jar through fuel pump, into carburetor.

Copyrighted material

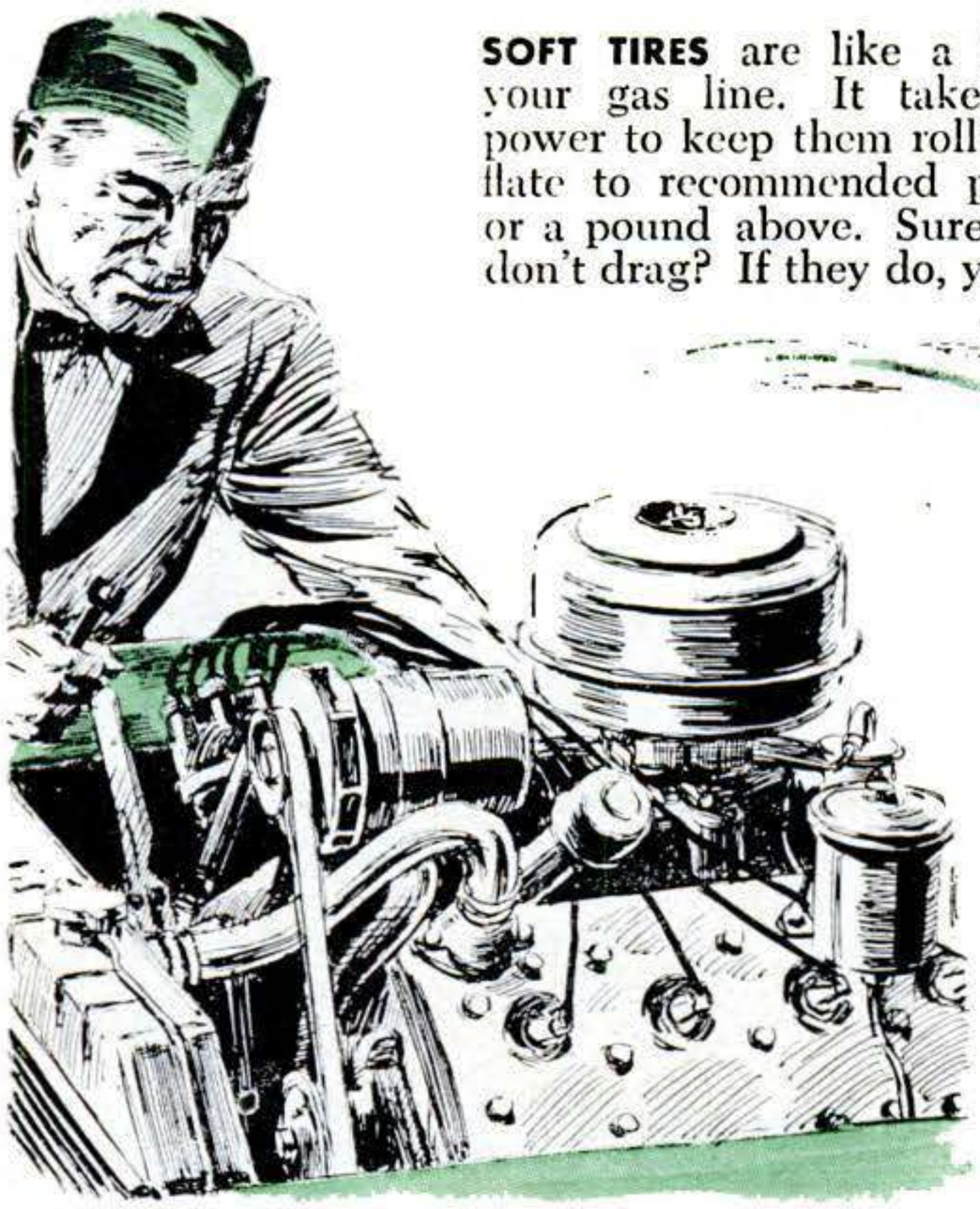
The Road to MORE MILES Per GALLON

The fellow with money to burn can find his match at the gas station. But if you want a hundred cents' worth of transportation for a buck, check yourself and your car against these proved mileage makers.

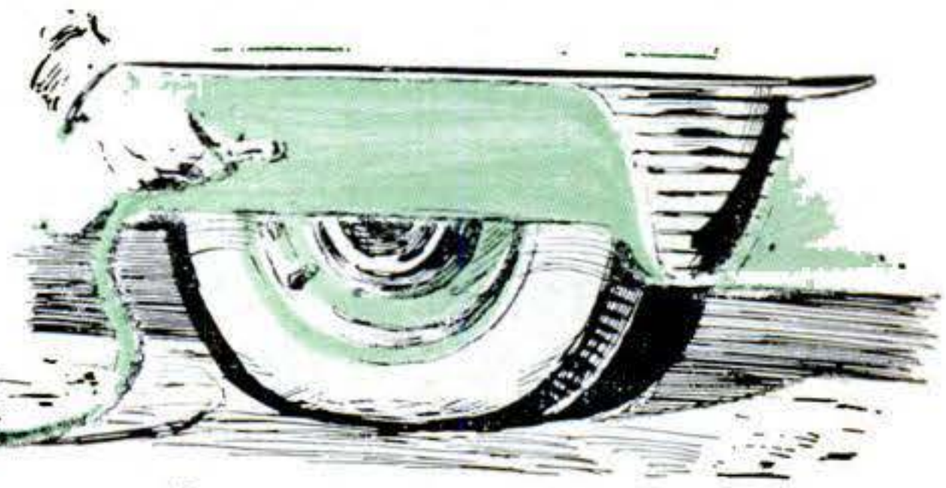
GOOD GAS MILEAGE starts in your driveway. Use manual choke as little as you can. If it's automatic, be sure it is working right. Shift to second as soon as you're rolling, and to high at the lowest speed the engine will manage. Cut the engine every time you park.



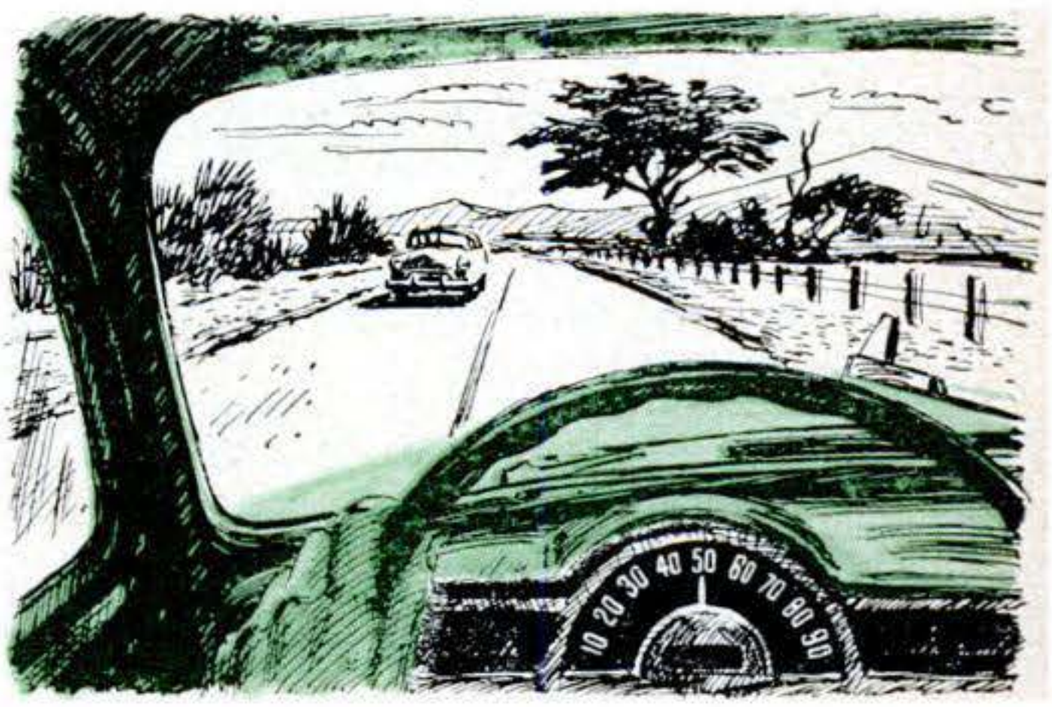
PACE YOURSELF to hit signals when they turn green, rather than dashing up to stop at red lights. It takes lots more gas to start from a dead stop than to roll through. Take it easy on the getaways; jack-rabbit starts are for the guy who enjoys buying gas.



SOFT TIRES are like a leak in your gas line. It takes more power to keep them rolling. Inflate to recommended pressure or a pound above. Sure brakes don't drag? If they do, you pay.



TUNE UP your engine for sweeter mileage. Keep carburetor on the lean side, idling speed as low as engine will tick. Set points to specifications, and have plugs cleaned and gapped regularly. Use the lightest oil that your engine's condition will permit.



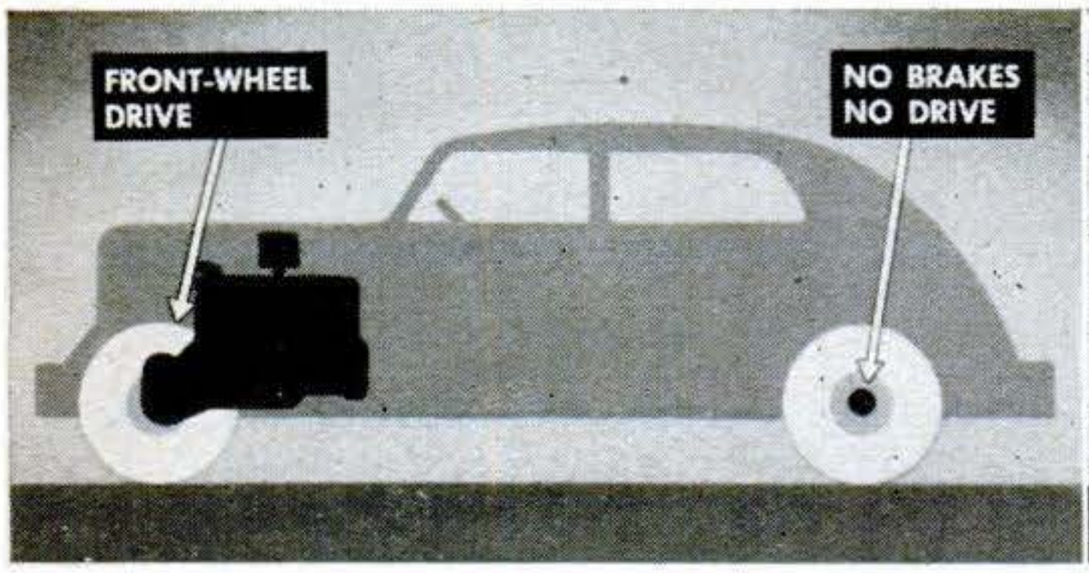
YOU PAY FOR SPEED, not just for the distance traveled. It takes more than twice as much gas to go a mile at 65 than it does at 35 m.p.h. Modern highways make this a tough choice. A good compromise is 50, but don't "pump" the throttle. Flashy passing burns gas fast.

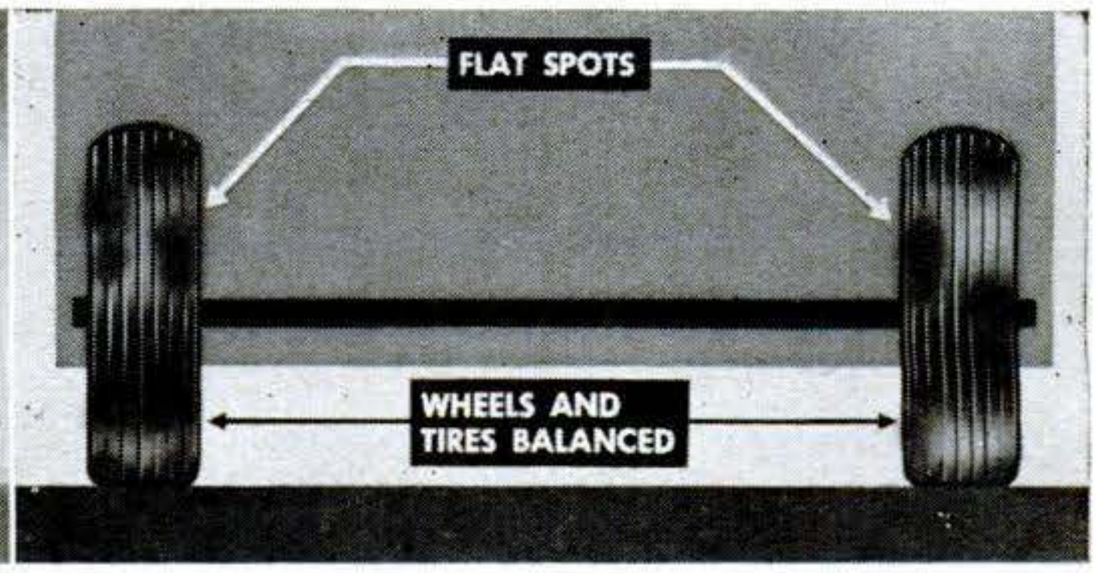
Copyrighted material

How to Read Your Tires

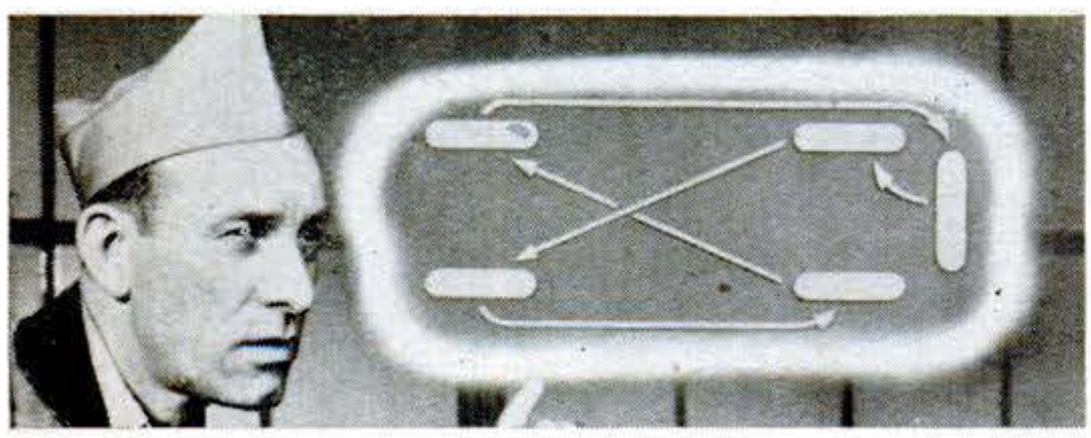
You can save a lot of that green folding stuff by learning what each wear pattern means—and then correcting the trouble.

Flat-spotting, or cupping, is easily recognized. It may show up on new tires before they have traveled more than 2,000 miles. Since this wear appears only on front tires, mechanics sometimes try to stop it by aligning the front end or balancing the wheels. But an investigation of flat-spotting by Chrysler indicates that alignment or balancing isn't the cure.



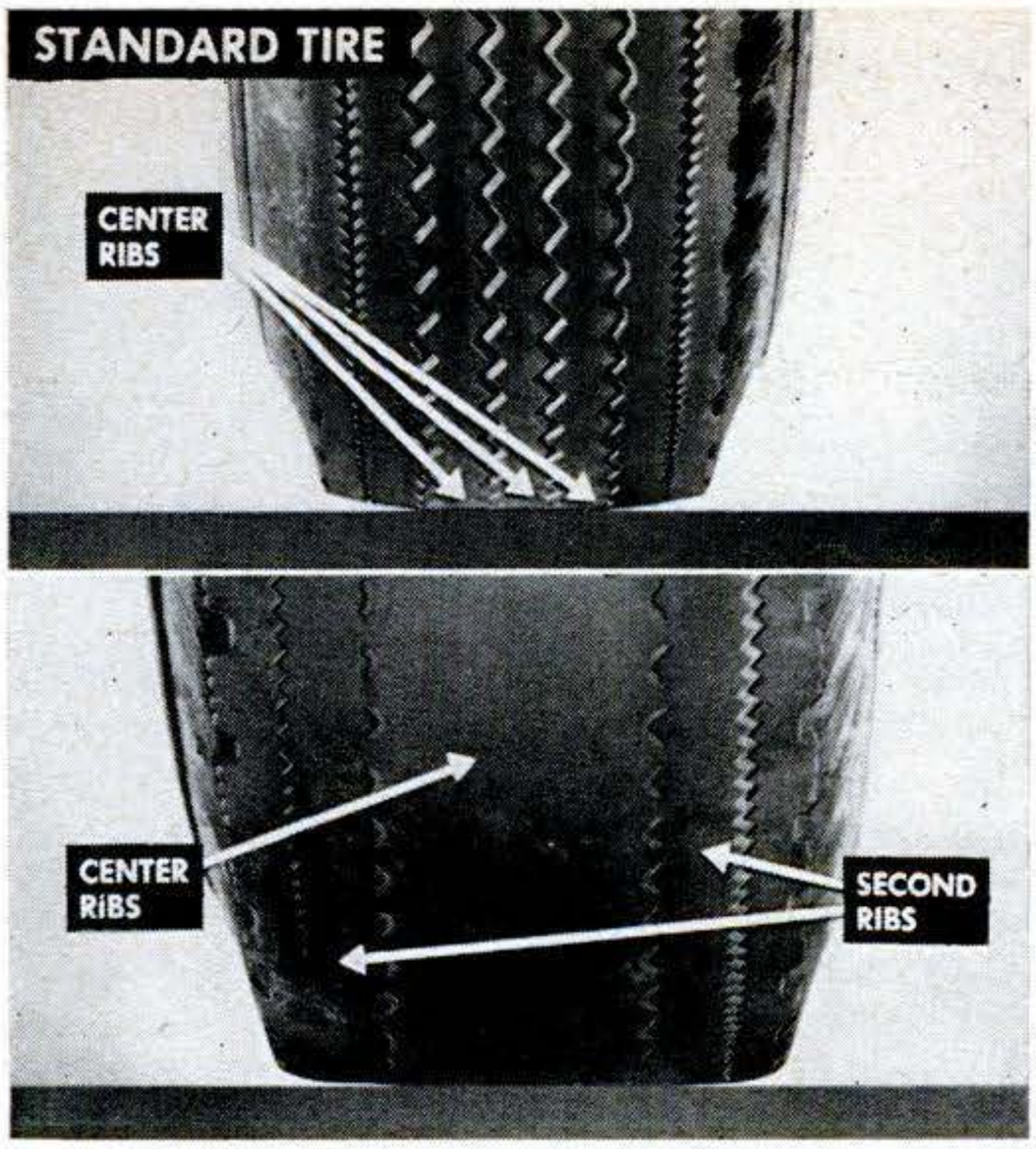


To study flat-spotting, Chrysler engineers rigged up a special test car with a front drive. The rear wheels and tires were carefully aligned, balanced and mounted to run free on a rigid axle. Then the car was driven back and forth on a 25-mile stretch of straight, level and smooth highway. At each end of the test course, the car was jacked up and turned around so there would be no wear from steering drag. Nevertheless, flat spots developed on the free-running rear tires. The driving front tires showed no sign of spots. Normally they develop only on front tires.

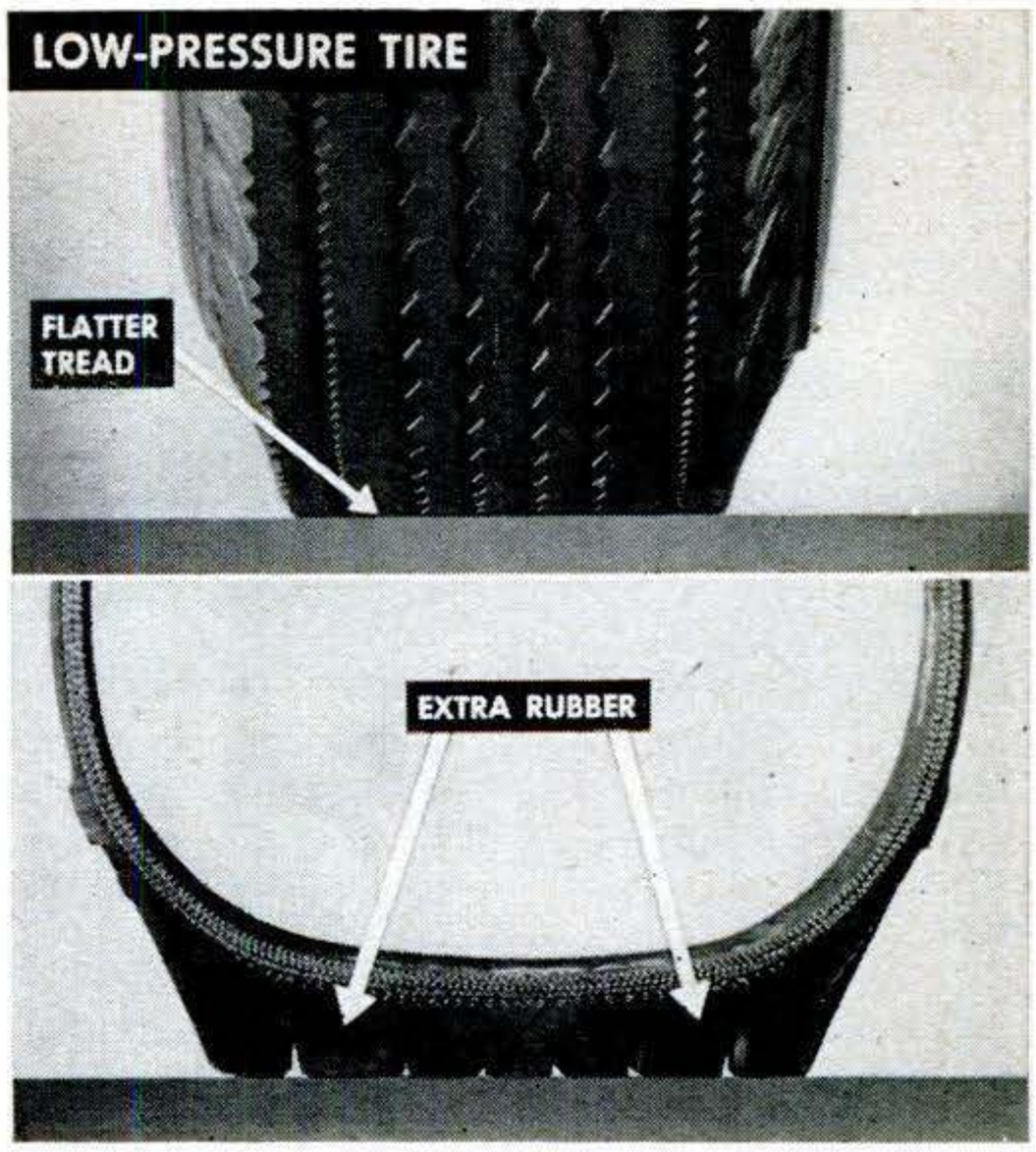


To correct cupping, the investigators concluded that crisscrossing tires every 2,500 miles was the only thing to do—and that's what they are advising mechanics in the film from which these pictures were taken. When cupped tires are shifted to the driving wheels at the rear, the wear soon evens out. What actually causes cupping? No one knows for sure.

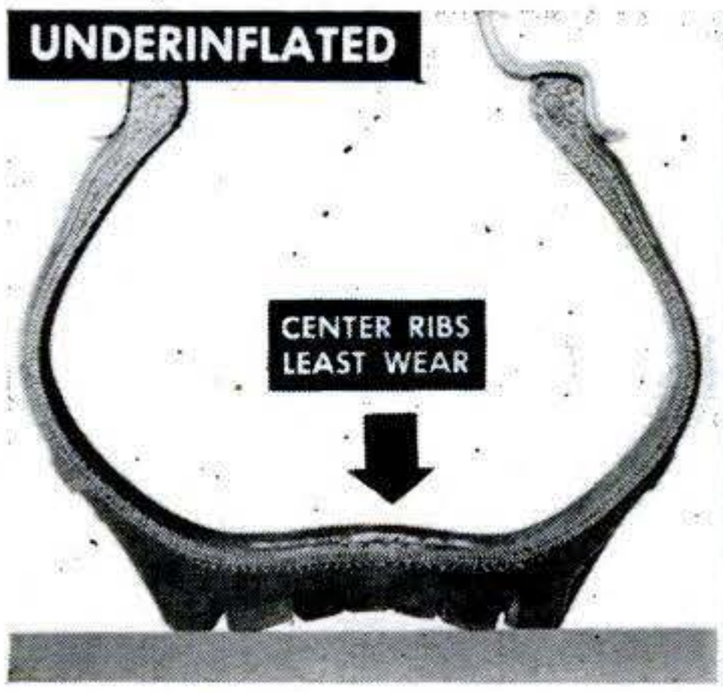
Copyrighted material

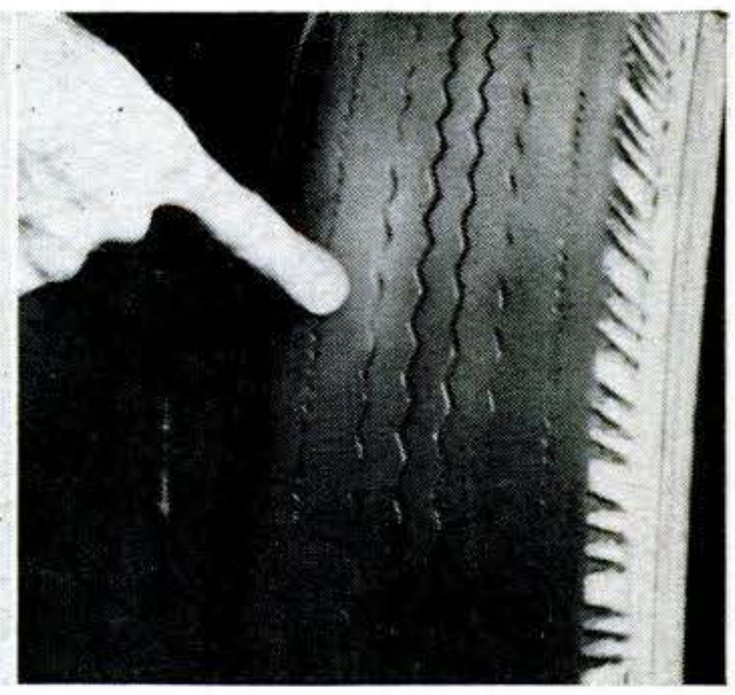


Even wear of the center and "second" ribs of a standard (non-low-pressure) tire shows you are getting full value from it. When inflated properly, this type of tire should ride on the center ribs, as the top photo shows, and these should be the first to show wear.

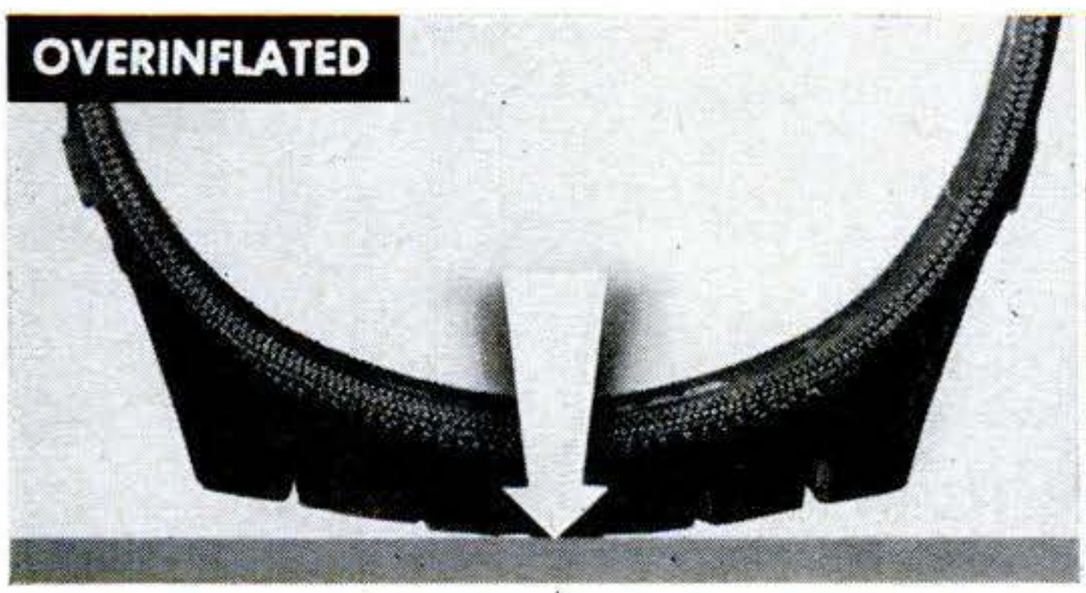


A low-pressure tire is designed with a flat tread so that the full width contacts the road surface when the tire has the correct amount of air. Extra rubber backs up the second ribs. Equal wear across the entire tread shows your tires will last their full life.





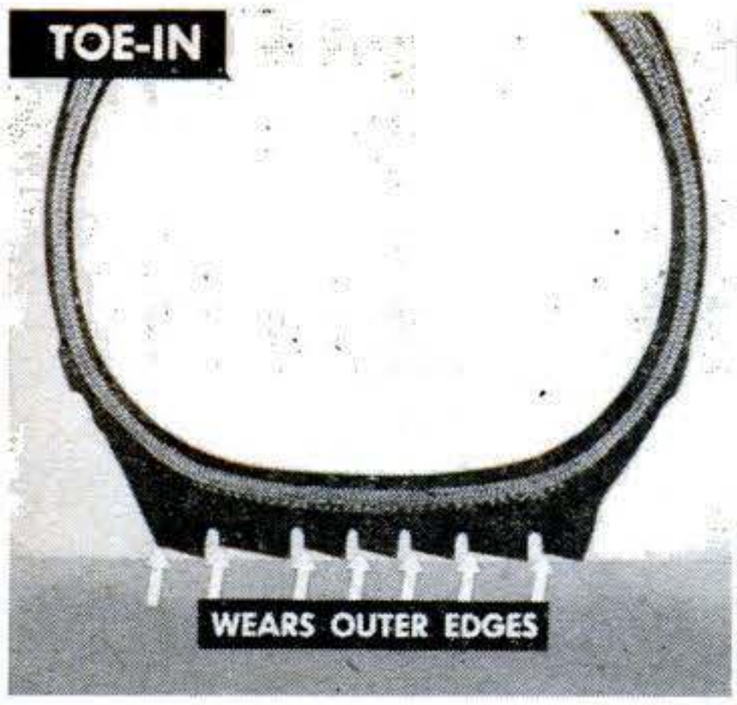
Underinflation causes the center ribs of a low-pressure tire to curve up away from the road surface as you see in the section above. Consequently, the center ribs wear little or not at all. At the beginning, the second ribs will wear off at an angle as seen in the second photo, and there will be little sign of wear on the edge ribs. But finally, if underinflation continues, both the edge and second ribs will show heavy wear. Heavy wear on the second ribs of a standard tire also is a sign of underinflation. Even a couple of pounds under the recommended pressure may do it.

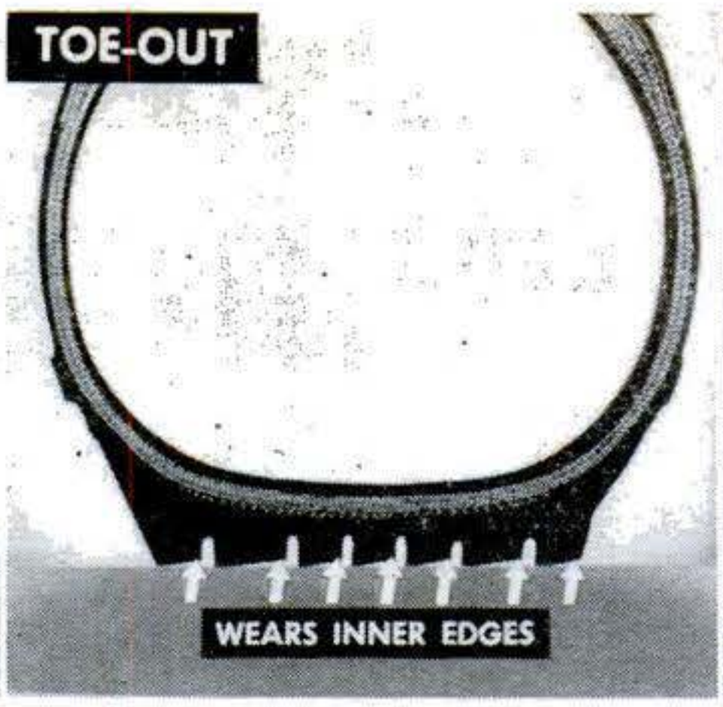


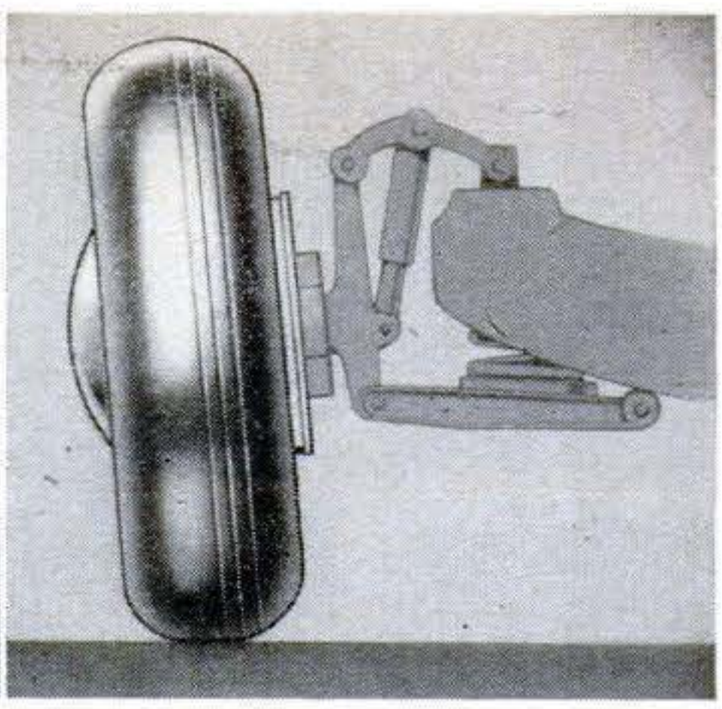
Overinflation of any tire will cause it to ride on the center bead. A strip of heavy wear down the center of the tire, therefore, indicates you should go lighter with the air hose. Tire in second photo has plenty of good rubber along edges, but fabric shows in middle.

Please turn the page for more on tires.

Copyrighted material

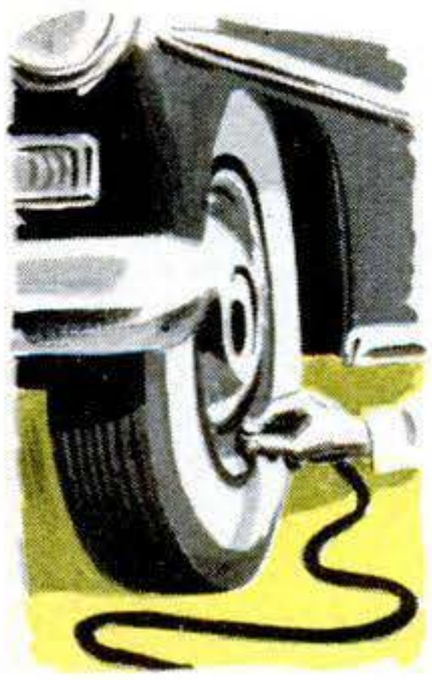




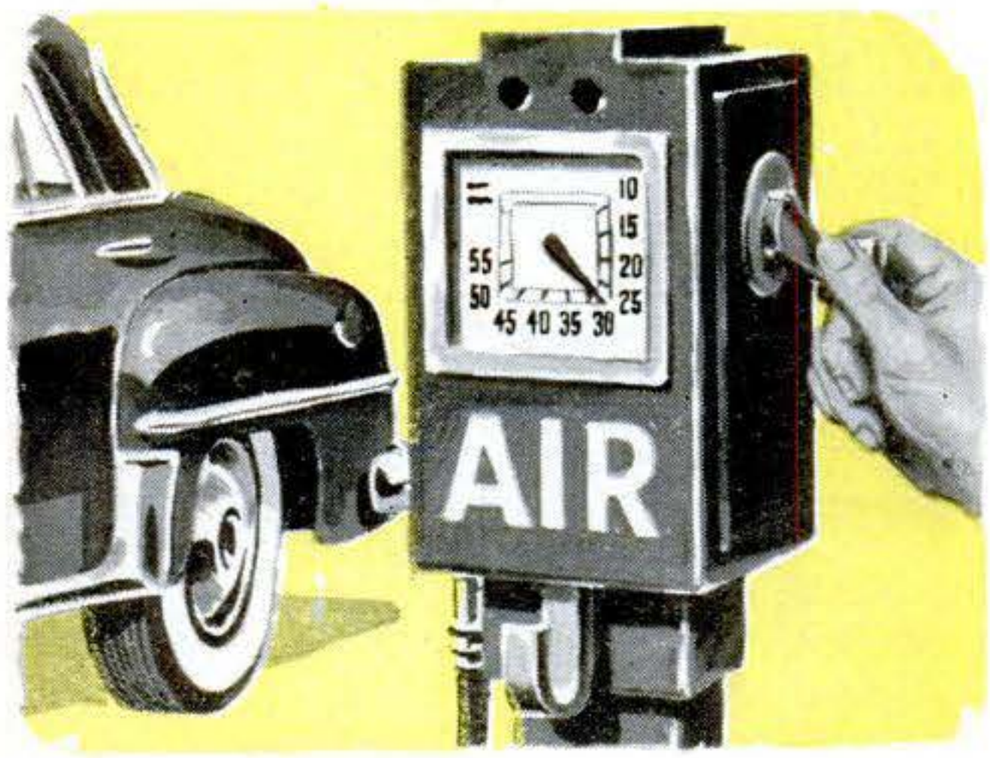


Incorrect alignment of front end soon shows up on front tires. Too much toe-in causes tires to be pushed along in pigeon-toed fashion. Outside edges of tread ribs are scraped along road and wear more than inside edges. Too much toe-out causes same kind of wear but on the inner edges. Toe-in and toe-out wear can usually be felt before it can be seen. Run your fingers across the tire and you can feel a feather edge scraped out from edge of the tread that isn't wearing. Heavy wear around the outside edge of tire (at right above) shows excessive positive camber. Wear on the inside indicates negative camber, a fault you should have corrected in a hurry.

Tips on Tires



Air may be trapped between tube and tire when a tire is mounted. When this air escapes, tire becomes underinflated. So check pressure every day or so for a while. Pressure should also be checked frequently in new tires because they become a bit larger at first. Because of the greater volume, the pressure drops.



Tires need right amount of air for same reason engine needs right amount of oil—to reduce friction and prevent dangerous heat. Too little air will burn out your tires by causing sidewalls to flex and overheat. This may cause tread or ply to separate, cords to snap. Such flexing can make a tire even hotter than its vulcanizing temperature.

Bleeding a hot tire only increases the chances of trouble. Because of the lower pressure, the tire will flex more—and get hotter.

Two pounds' extra pressure is a good rule when you are starting a long trip with a load heavier than usual.

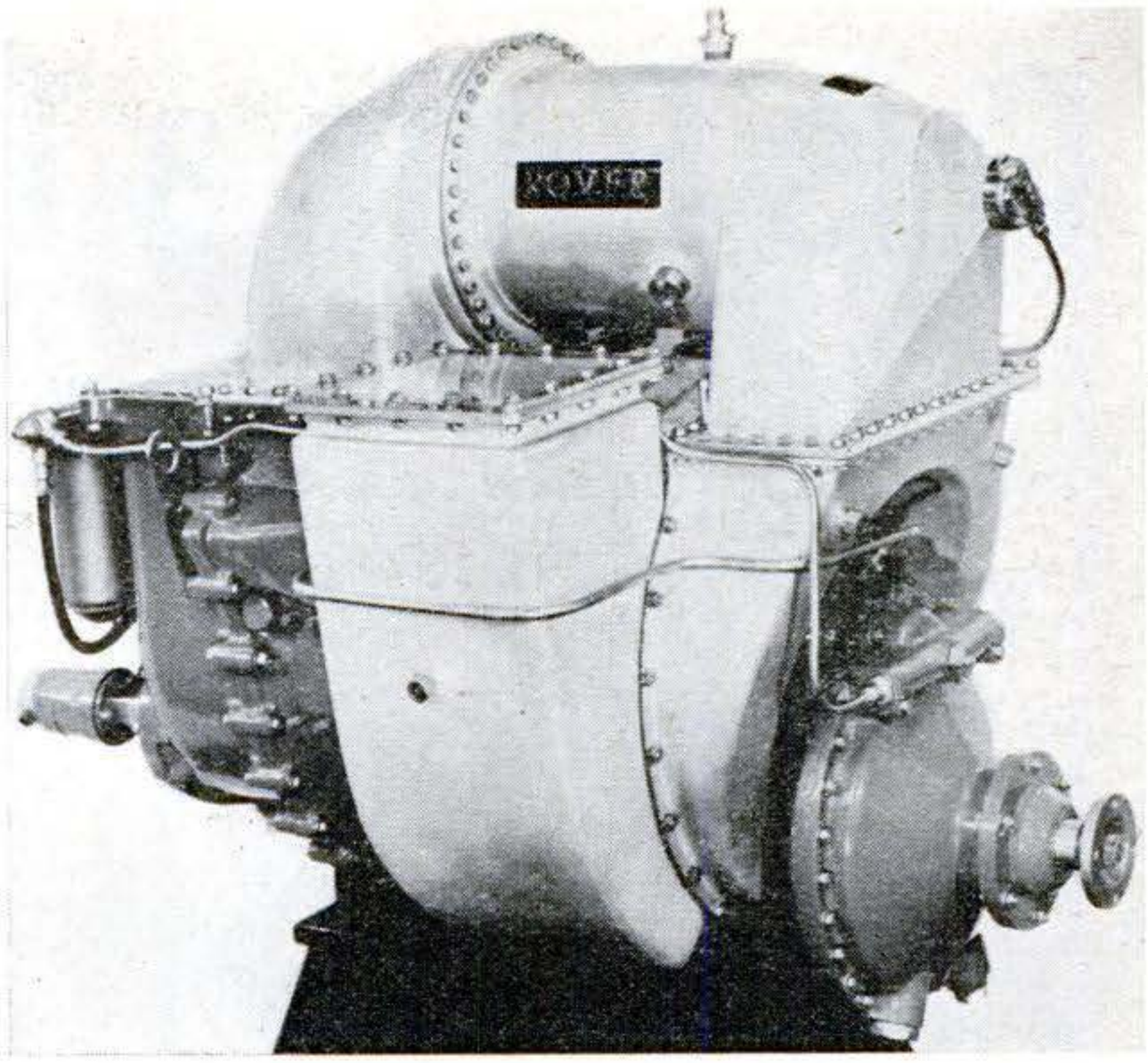
Tires wear differently on each wheel. That's the big reason for a regular rotation program.

Cool weather is best time to break in new tires. Like shoes, tires flex, stretch and relax when first put on. Tests have shown a tire broken in at moderate speeds during cold weather will take its final shape slowly without stress, strain or overheating.

Copyrighted material

New for Cars

A Turbine to Power Your Car?

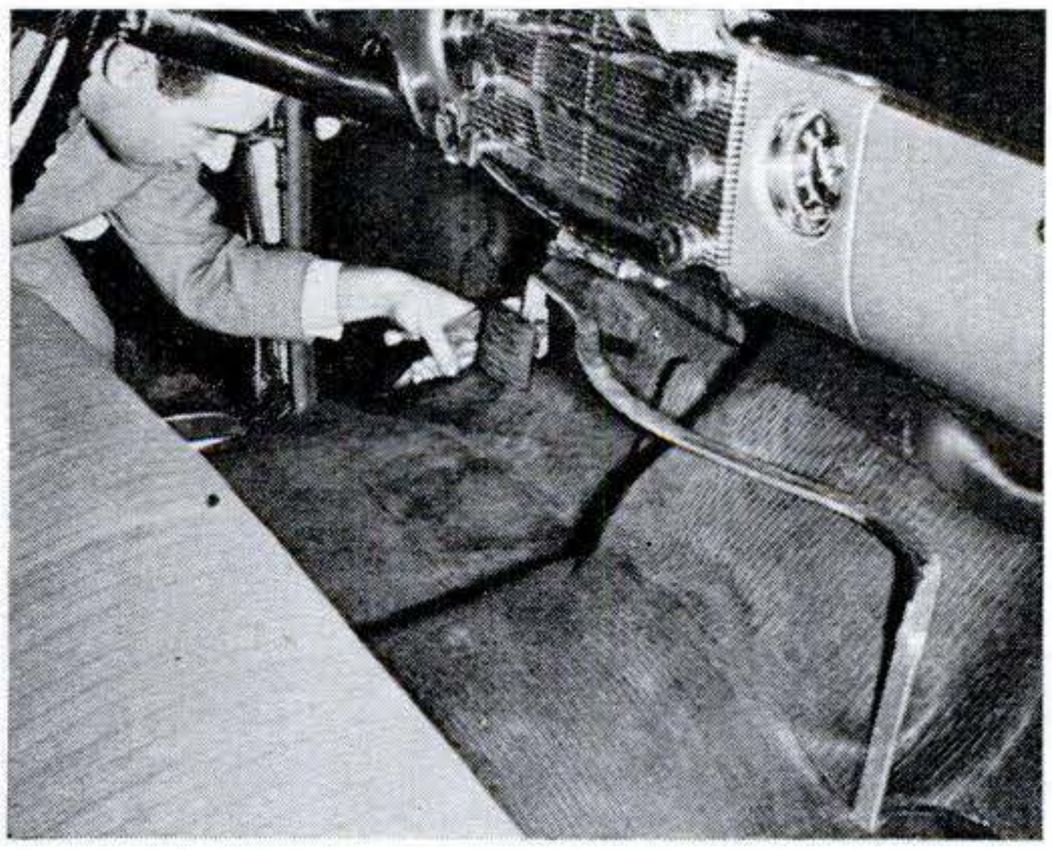


You never would recognize this as an automobile engine. But that's what it is—the latest version of an experimental turbine developed by Rover Company, Ltd., of Birmingham, England. It will be used for continuing road tests in a special car built for the purpose (PSM, June '50, p. 98). In the latest tests, in Belgium this summer, the turbocar hit more than 152 m.p.h.

Since the car was first demonstrated, a heat exchanger has been added to the engine to reduce fuel consumption, originally much too heavy for a practical car. The exchanger does the job, but Rover officials say it is not yet fully reliable. The engine can run on a variety of fuels, including kerosene. It develops 200 horsepower.

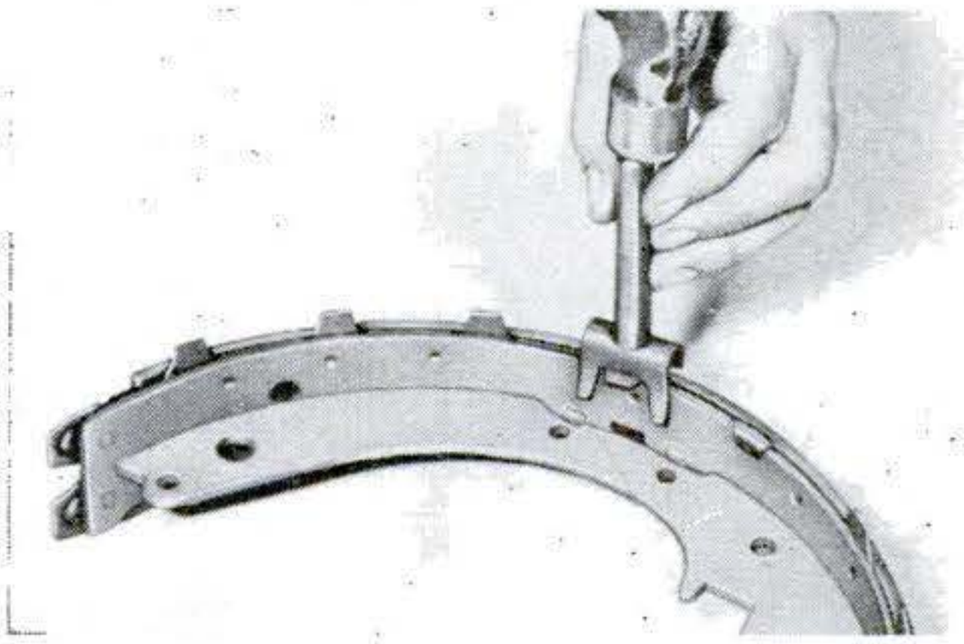
Experts expect the engine to be used first in sports cars since its power is so high in comparison with the weight. The turbine also gives very smooth and rapid acceleration. The car uses no clutch, transmission, carburetor or ignition system.

Brake Control Aids Beginner

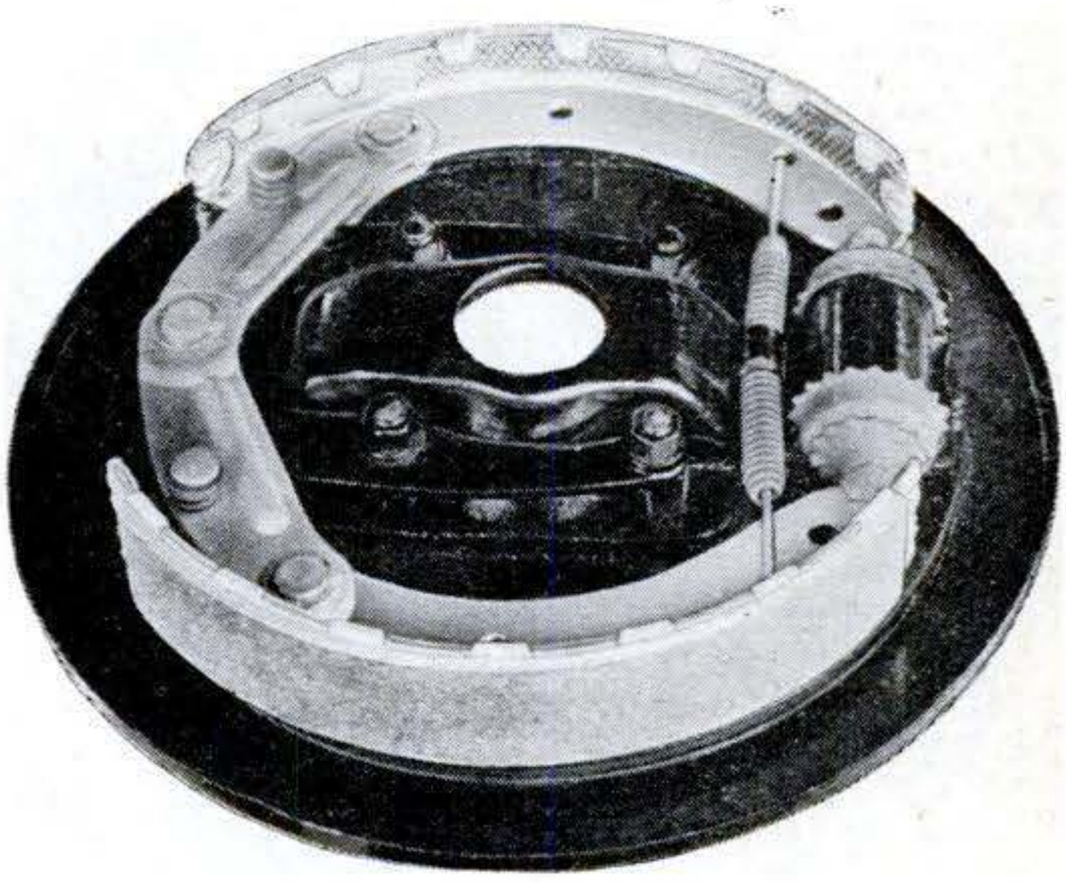


WHEN you teach someone to drive, this brake control will enable you to stop or slow the car if the novice gets rattled. A metal bar, it clamps to the pedal at one end, rests on the car floor at the other. *Seyber Mfg. Co., P. O. Box 557, Lynbrook, N. Y.*

Brake Lining Clamps on Shoe



BONDED at the factory to metal backing plates, these replacement brake linings can be quickly installed with a hammer or a special crimping tool. Metal tabs on the Lock-On unit are bent firmly around the brake shoe after the old lining has been removed. *Lock-On Brake Lining Corp., 620 N. Almont Dr., Los Angeles 46.*



Copyrighted material

Gus Pulls a Trick Play

To Jefferson High, marooned in the Model Garage with a busted bus, that opening game meant more than the Rose Bowl . . . It was no time for Gus to fumble the ball.

By Martin Bunn

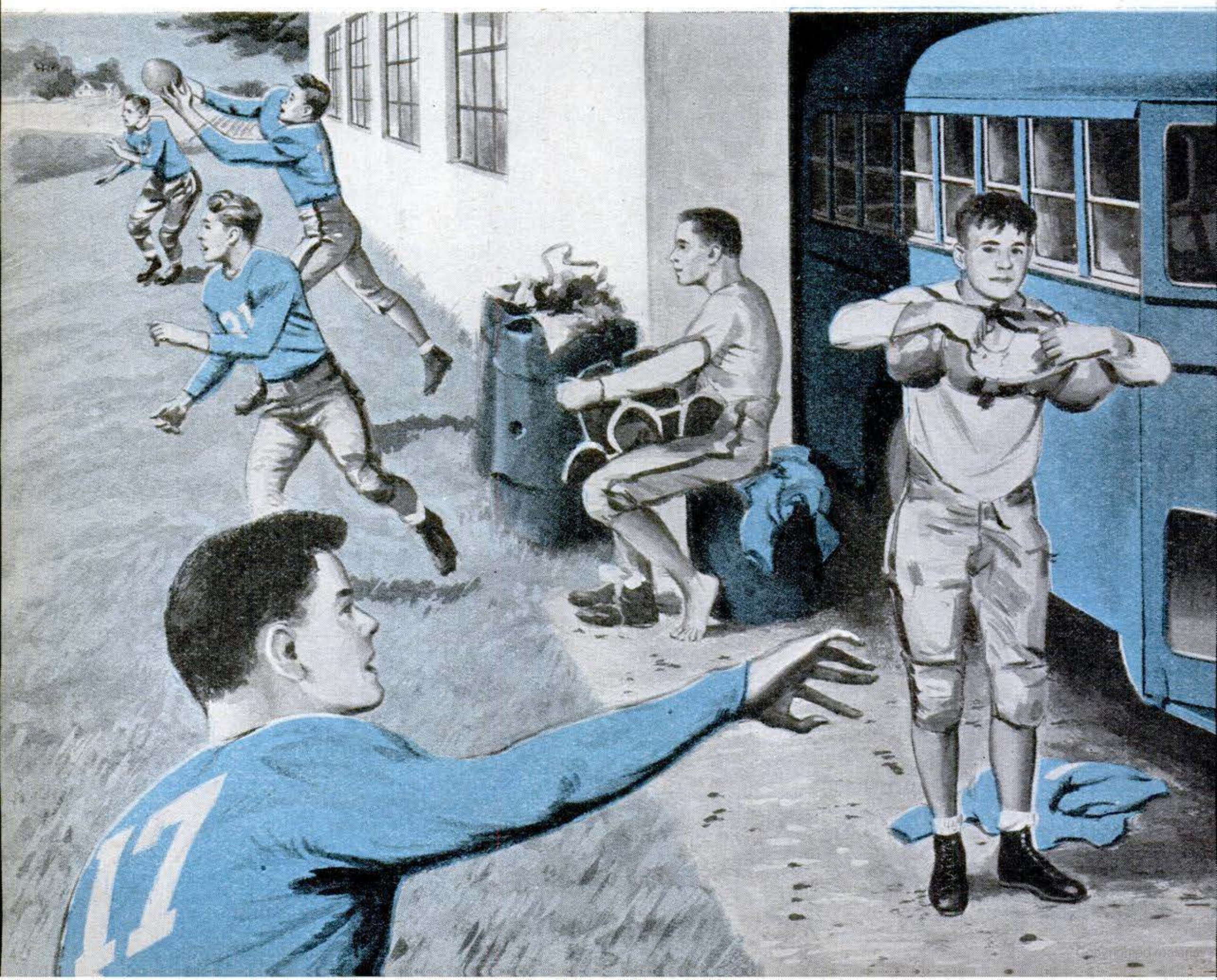
IT WAS not a morning for working, not that morning on the bright, crisp edge of September. Perhaps it was the pungent trace of wood smoke and burning leaves spicing the air. Gus Wilson breathed deep as he lowered the lube rack. Whatever that intangible ingredient was, it had no effect on the Model Garage. Saturday morning was rushed as ever.

Gus backed the old Essex off the rack and rolled it out to the side of the garage to make room. It was then that he noticed a big school bus being pushed past his gas pumps by a bunch of husky teen-age boys.

"That's far enough, fellows." An older man, who seemed to be in charge, wiped his forehead with a hand that left a greasy smear, and grimaced at Gus.

"I'd be glad to let you have this heap for a thin two-bits!"

"I'll take it," Gus grinned. "But what seems to be the trouble?"



"Trouble isn't the word for it! It's ten now, and in three hours Jefferson High is supposed to play the first football game of the year. I'm the coach. We're scheduled to meet Greeley Prep at Millrace Corners, and that's 50 miles from here. Now I get halfway there and this bus starts acting up again!"

"Again?" asked Gus.

"Yes, it's the fourth time she's gone dead, and don't tell me I need a new fuel pump! Joe Barnes, the regular driver who ferries the kids during the week, says it's happened three times during the last week and they put in three new fuel pumps and one carburetor. Now it's done it again!"

"Well, what seems to be wrong with it?"

"Only one thing is definite. Fuel isn't reaching the carburetor. Yeah, I know! It sounds like the fuel pump!"

Gus shrugged his shoulders and opened up the hood. "You're right. It does."

Gus was aware of the tense, impatient interchange of worried glances among the little group of football players who crowded around him as he checked the carburetor. He worked slowly and surely, thinking about the boys, and how disappointed they'd be if their opening game had to be canceled.

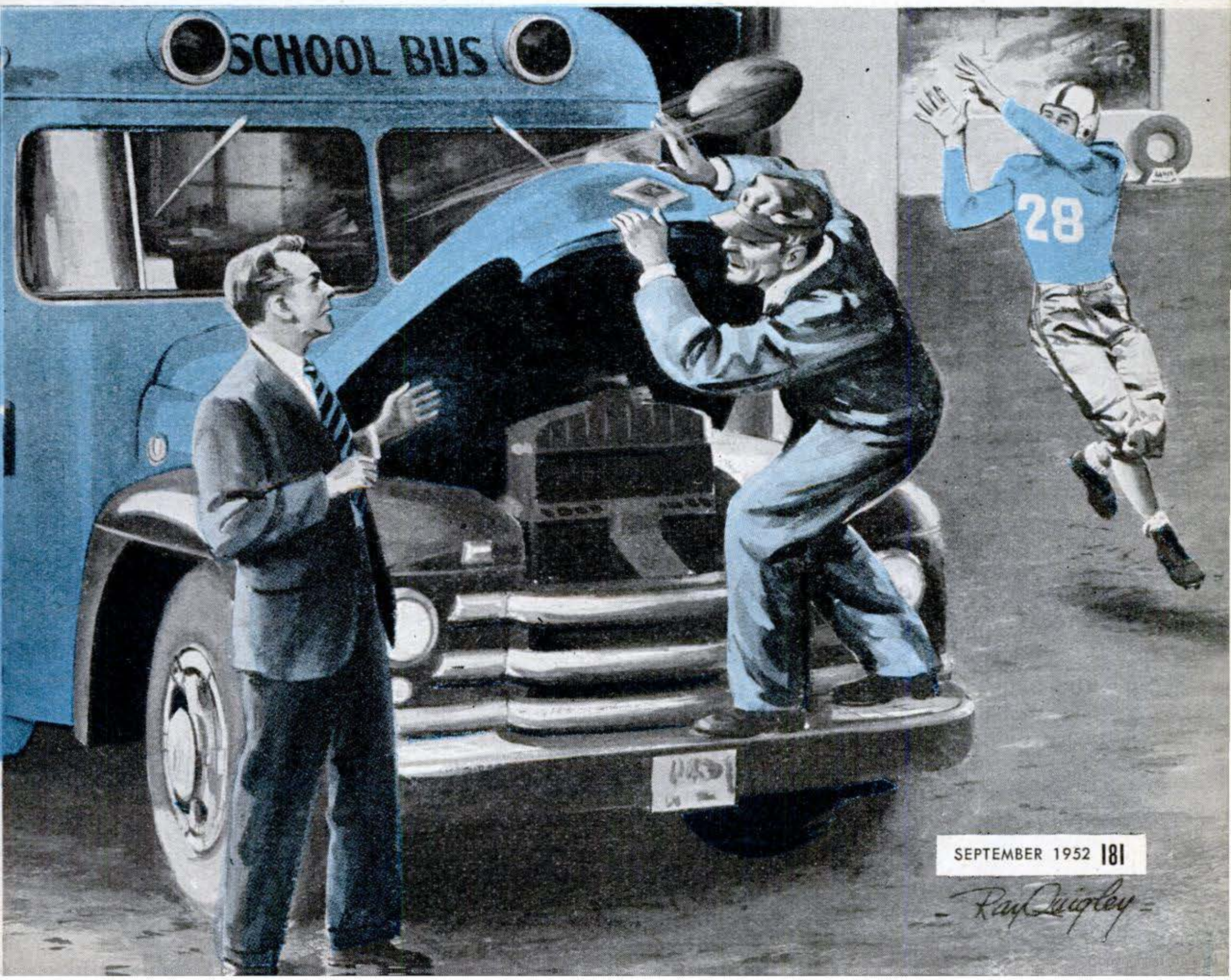
"You guys are mighty anxious to get to that game, aren't you? What positions do you play?"

The boy at Gus's left shoulder, a wiry keen-looking youngster, spoke up.

"Well, I'm Tom Kendall, sir. Fullback. And this is Willy Horton, halfback, Herby Ashton, center, and old B-B—I mean Bud Black. He makes the extra points with his educated toe."

"A lot of good that toe'll be if we don't even get there," the coach groaned. "I can see it now. Paul Thompson. Stenciled on a cot at the poorhouse!" He said it facetiously,

Gus raised his head and almost got conked by a football.



but Gus detected a serious note beneath the attempt at humor.

"Why do you say that?"

"Jefferson takes football seriously. There's a great deal of school pride involved. And we won one game last year! The school board, the alumni, all of them are after my hide. If I don't pull something out of the bag this year, well . . ." He let it go at that.

Players Don Uniforms to Save Time

Gus finished with the carburetor. There was nothing wrong with it. As the coach had said, gasoline wasn't getting that far.

He pulled a wrench out of his dungarees and disconnected the line from the carburetor to the fuel pump. But it, too, was perfectly okay.

"Let's try the rear section of fuel line leading from the tank."

"Can't you hurry? It's 10:15 already!"

"If I go any faster, I might overlook something. Just take it easy."

"Easy! It'll take an hour and a half in this traffic to get there. Fifteen minutes for the boys to change and ten minutes to talk 'em into the right mood!"

"Why not let them change right now in the garage while they're waiting?" Gus suggested.

"Swell idea!" Coach Thompson looked more cheerful as he rounded up his players and shooed them inside. "Hop to it, men!"

While the team tramped noisily into the Model Garage, Gus finished dismantling the fuel line running from tank to pump and tested it for obstructions and leaks. There were none.

The outlet on the gas tank, where the fuel line connected, was not blocked. And the tank was almost half full.

He reconnected the line and scratched his head. Then he remembered.

"Forgot about your filter. Sometimes they get overloaded with silt."

"If it was that, why would it run perfectly for a couple of days at a clip after those other mechanics put new pumps in?"

"Well, might as well check it anyway. Never can tell."

Dizzy Definitions

Main Springs—Source of water for your radiator.

Gearbox—Handy place for your fishing tackle.

Brake Arm—Happened pretty often in the old days when they had to start 'em with a crank.

Muffler — Indispensable for back-seat drivers.

Tie Rods—Swell to hang your ties on and avoid wrinkles when traveling.

Radiator Grille—Good gadget for cooking your own hamburgers on a trip.

Crankcase—Imagine the guy suing you for putting one little dent in his fender!

He removed the small bowl with its fine-mesh copper screen and found a minimum of silt in the bottom. That was that . . . and he was right back where he started. It was such a simple thing, there being nothing complicated between gas tank and carburetor. The pump was the only item he hadn't checked, and the reason he hadn't torn it apart was that it was brand-new. The third new pump installed in a week, and he had been sure there was an outside cause, something else rather than pump failure. If not, then Thompson had been handed a mighty unlikely coincidence. That situation and the previous bunglings of other mechanics left him confronted with a delicate problem. . . .

In twos and threes the football players were trotting out now, looking bigger and more impressive in their uniforms, yelling cheerful insults to each other. They seemed to take it for granted that Gus would spot the trouble and get them started in time. Their confidence made Gus all the more anxious to see that they had their chance to play this opening game that meant so much to them. . . . And then there was Coach Thompson—he seemed like a pretty good egg after all, and his future might depend on whether his team played—and won—today. Gus held a lot of responsibility in his two grease-stained hands. He went back to work.

Flying Football Just Misses Gus

When he stuck his head out from under the hood a couple of minutes later, Gus almost got conked by a flying football—two of the players were demonstrating their passing prowess—but he didn't care. He felt he was getting close to a solution to the mystery—at least he knew what *wasn't* wrong.

"Mr. Thompson, as you said, you aren't getting gas to the carburetor, and yet your fuel lines are clear. You know what that leaves?"

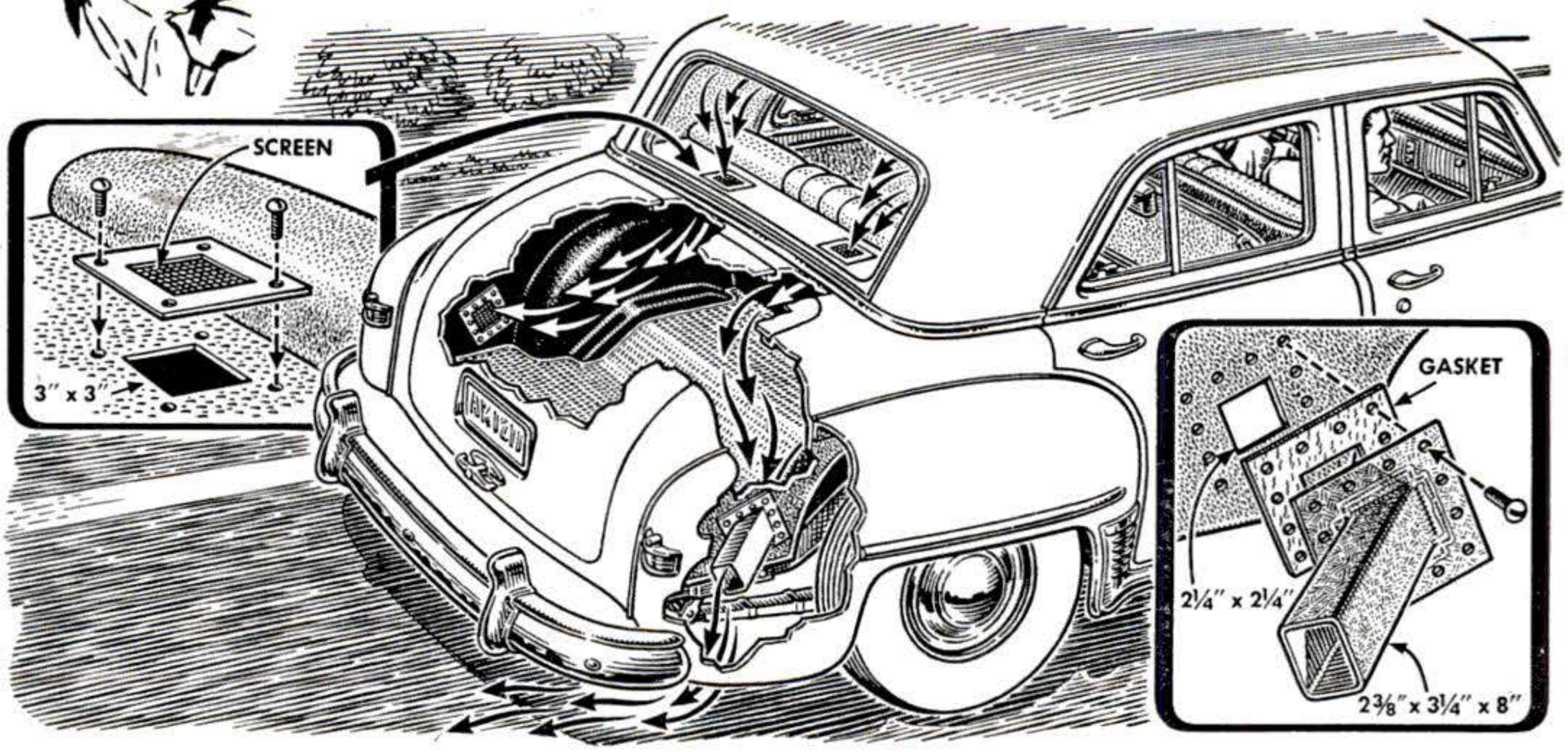
Paul Thompson's face darkened. "The fuel pump! You're going to suggest a new one?"

"I'm only telling you I've checked everything else that could keep fuel from reach-

[Continued on page 230]

Copyrighted material

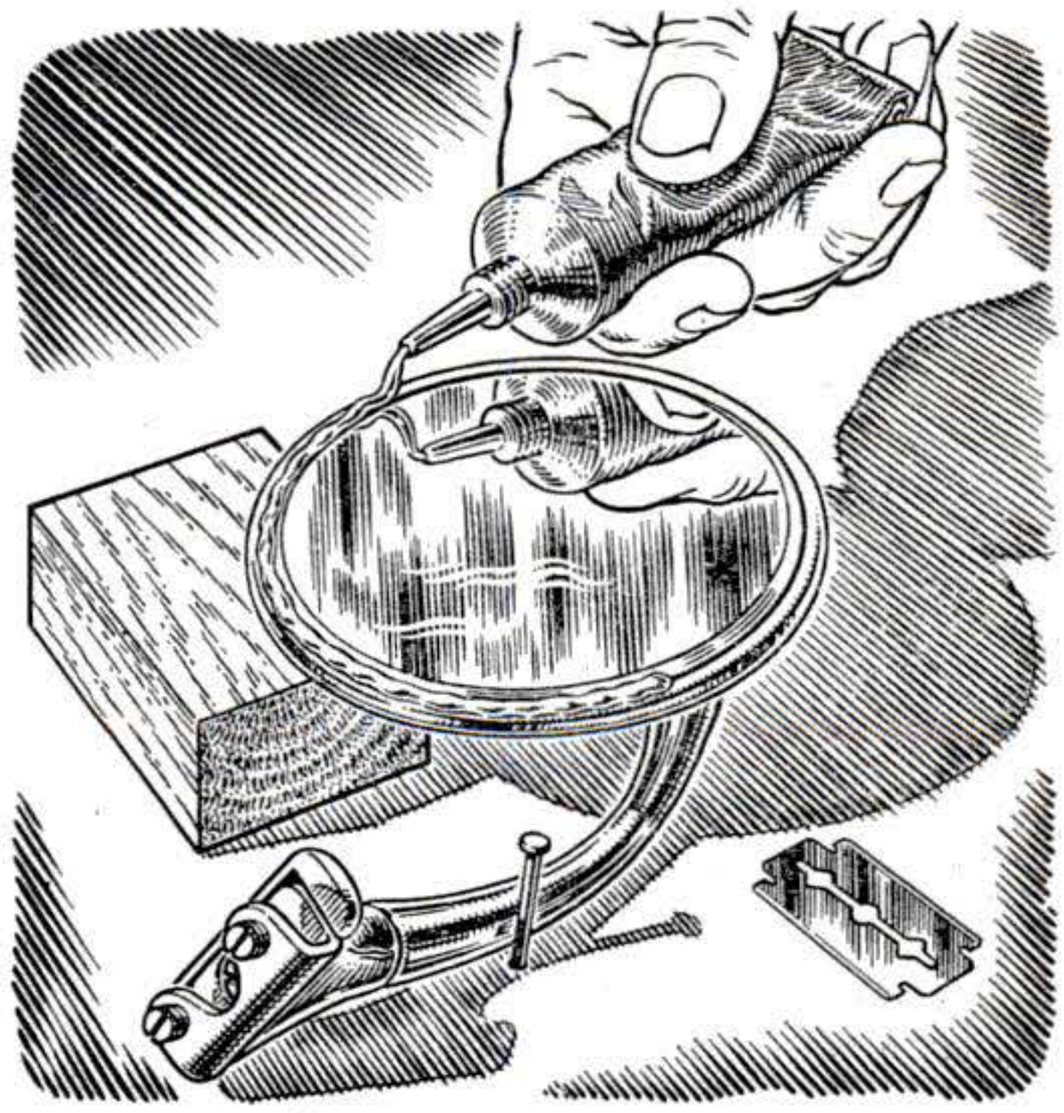
Hints from the Model Garage



Rear air outlets installed like this will often increase the effectiveness of a heating system that draws fresh air from outside, especially if the car is tightly sealed. The circulating air also will help keep the side and back windows free from fog, keep the trunk free from dampness and make it unnecessary to open windows.

Screens over the parcel-shelf openings prevent objects from falling through. The outlet can be a piece of square gutter pipe. Point it back to keep out mud and water.

For work under a car, a gooseneck desk lamp is an excellent addition to a creeper. Drill the base of the lamp and screw it to the creeper. Invert the shade to throw light up. The flexible neck will keep the light in the desired position.

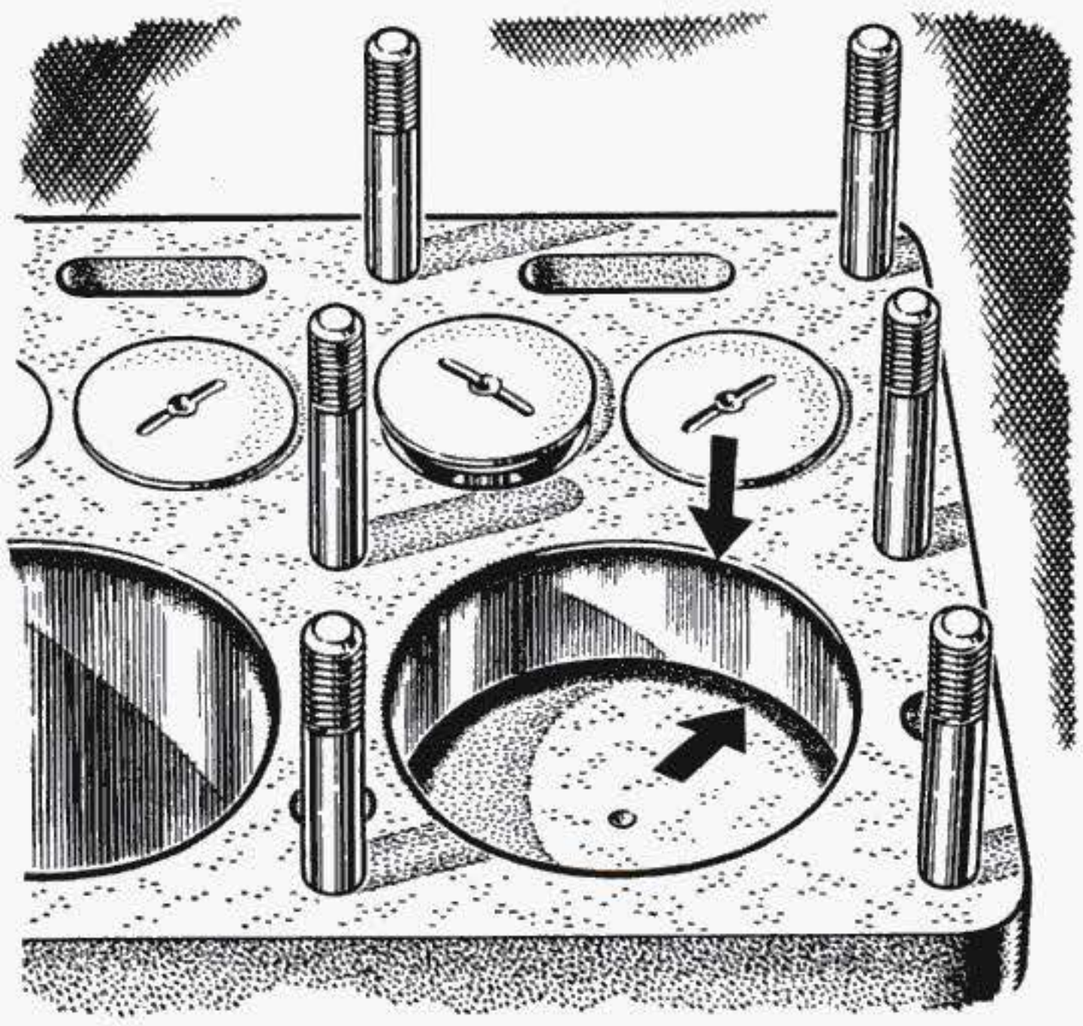


If a mirror rattles in its frame, transparent windshield-glass sealer or a clear cement applied between the glass and rolled edge will keep it quiet. Remove mirror and place it flat to do the job. Scrape off excess cement with a razor blade.

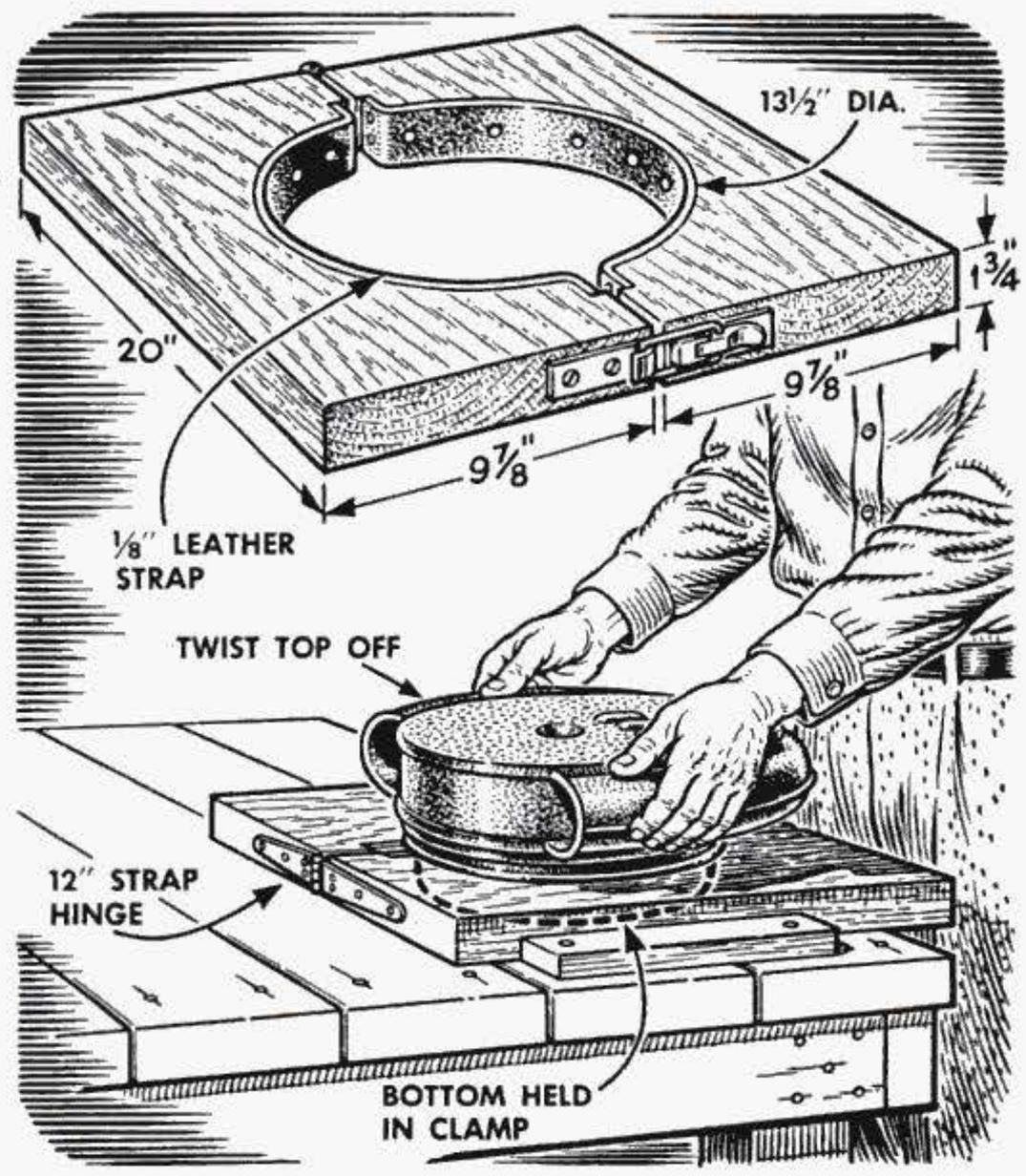
Please turn the page for more auto hints.

Copyrighted material

MORE Hints from the Model Garage

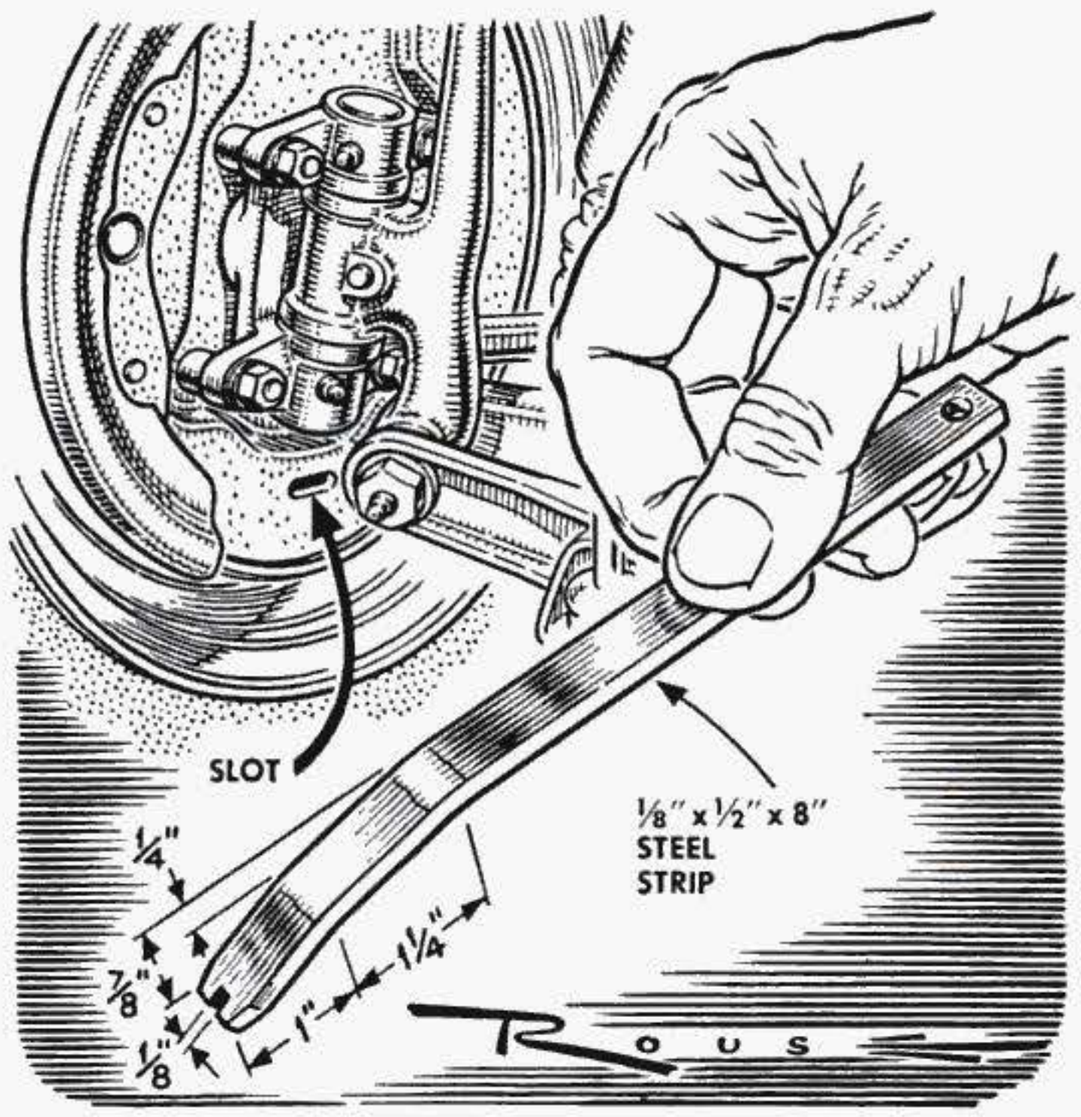


In scraping carbon from an engine during a top overhaul, some mechanics contend you can do too good a job. Their practice is to leave a ring about ⅛″ wide around the top edge of the piston and another ring around the bore just above piston travel. This, they say, will preserve the oil seal. Removing the carbon may make the car an oil hog.

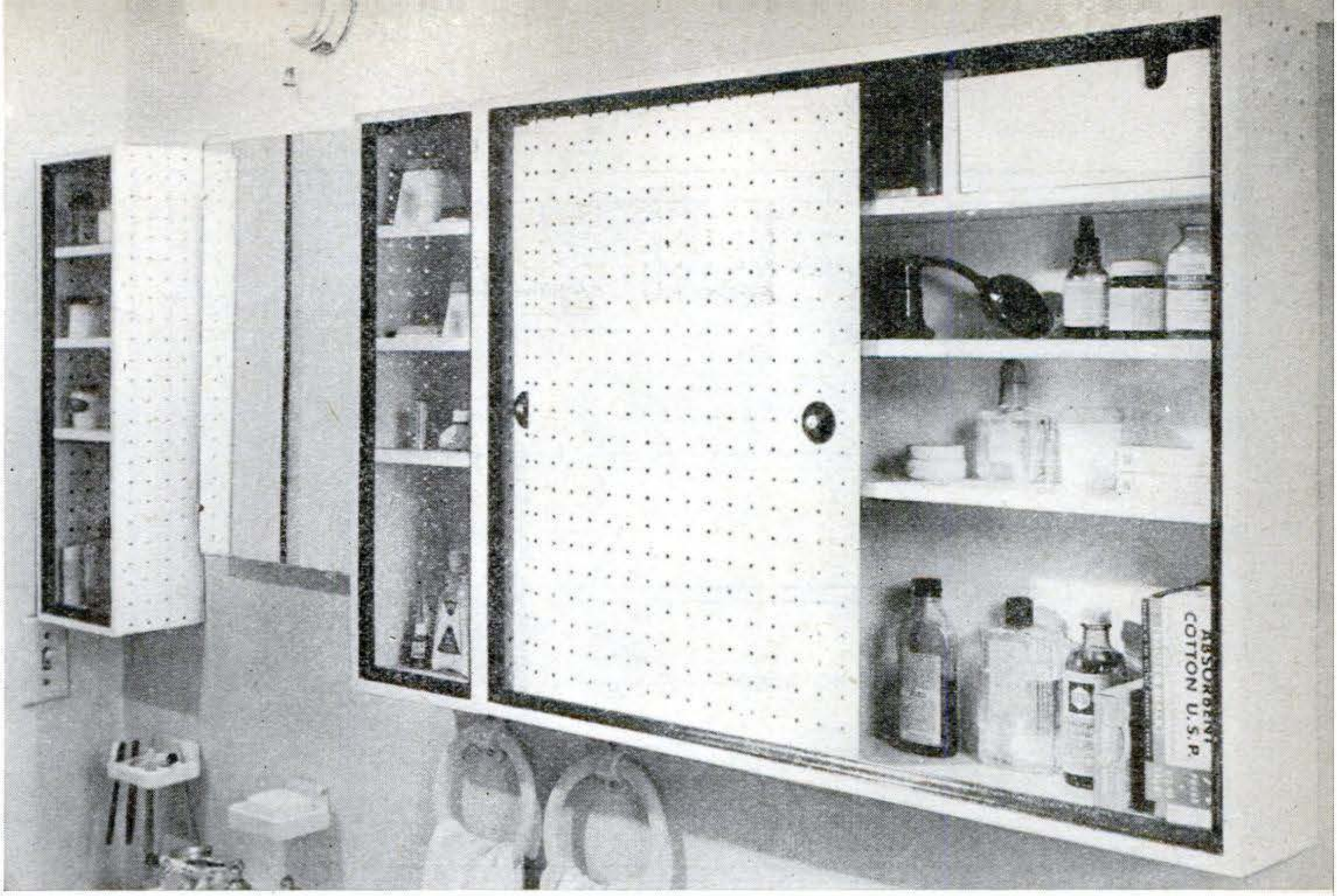


Removing the air-cleaner cover on a new Cadillac can be troublesome. Driving it off from underneath may deform the metal. This clamping device will do the job with ease. Remove the cleaner from the engine, clamp the bottom between the leather-lined jaws, and you can twist off the top without causing any damage to the metal.

Cold drafts can be kept out of a garage fitted with overhead doors by slitting a length of garden hose and nailing it to the bottom edge of the door. This will seal the opening even if the floor of the garage is uneven.



A wrench for adjusting brake shoes can be made from a piece of ⅛″ by ½″ by 8″ mild steel. File a ⅛″ slot in the end and bend to the shape shown above. Use by inserting it in the slot on the backing plate and prying around the notched wheel.



These Cabinets Clean Up Bathroom Clutter

By C. Strickland

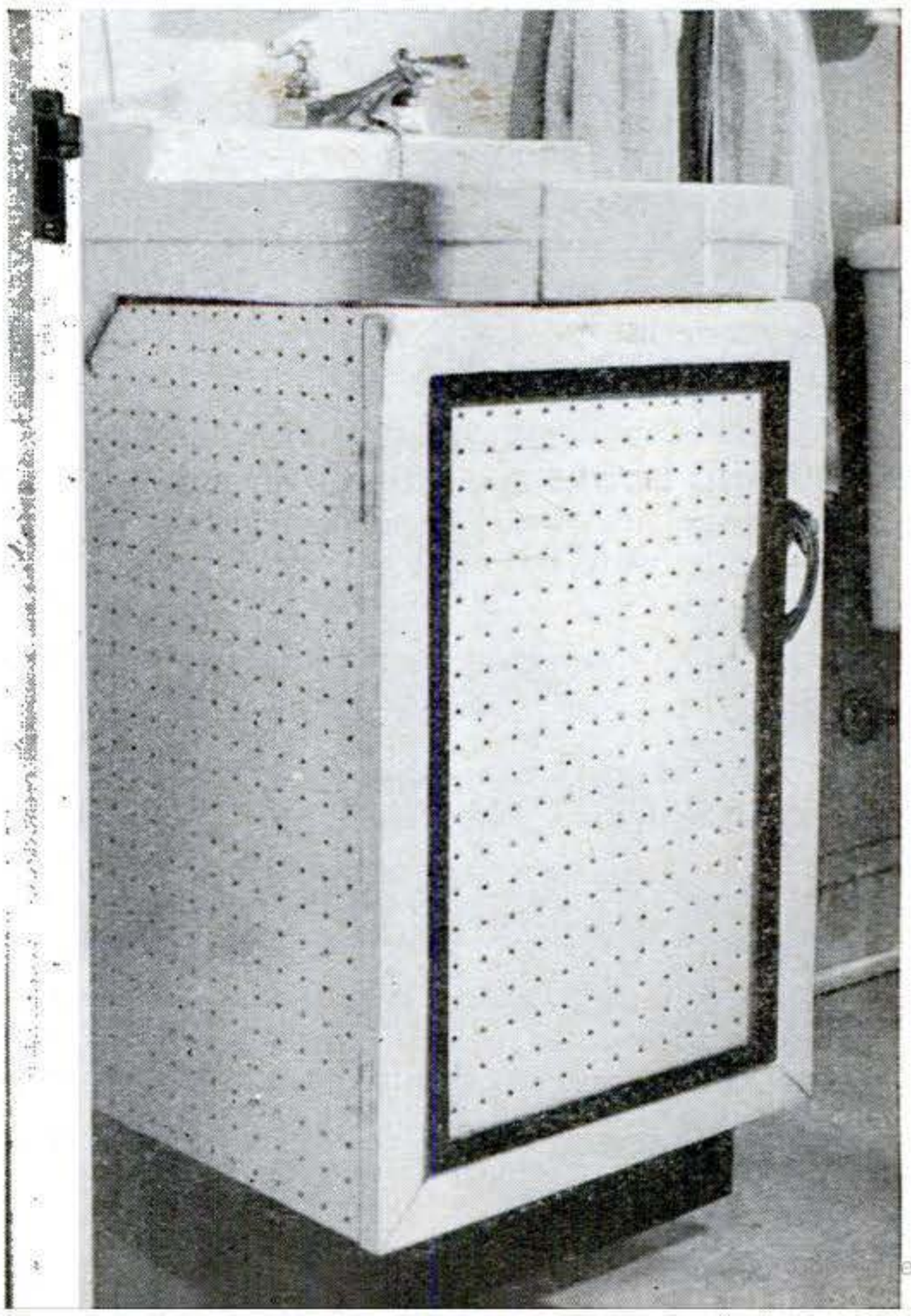
Shelves are spaced for both short and tall bottles in wall cabinets that fit existing but unused space.

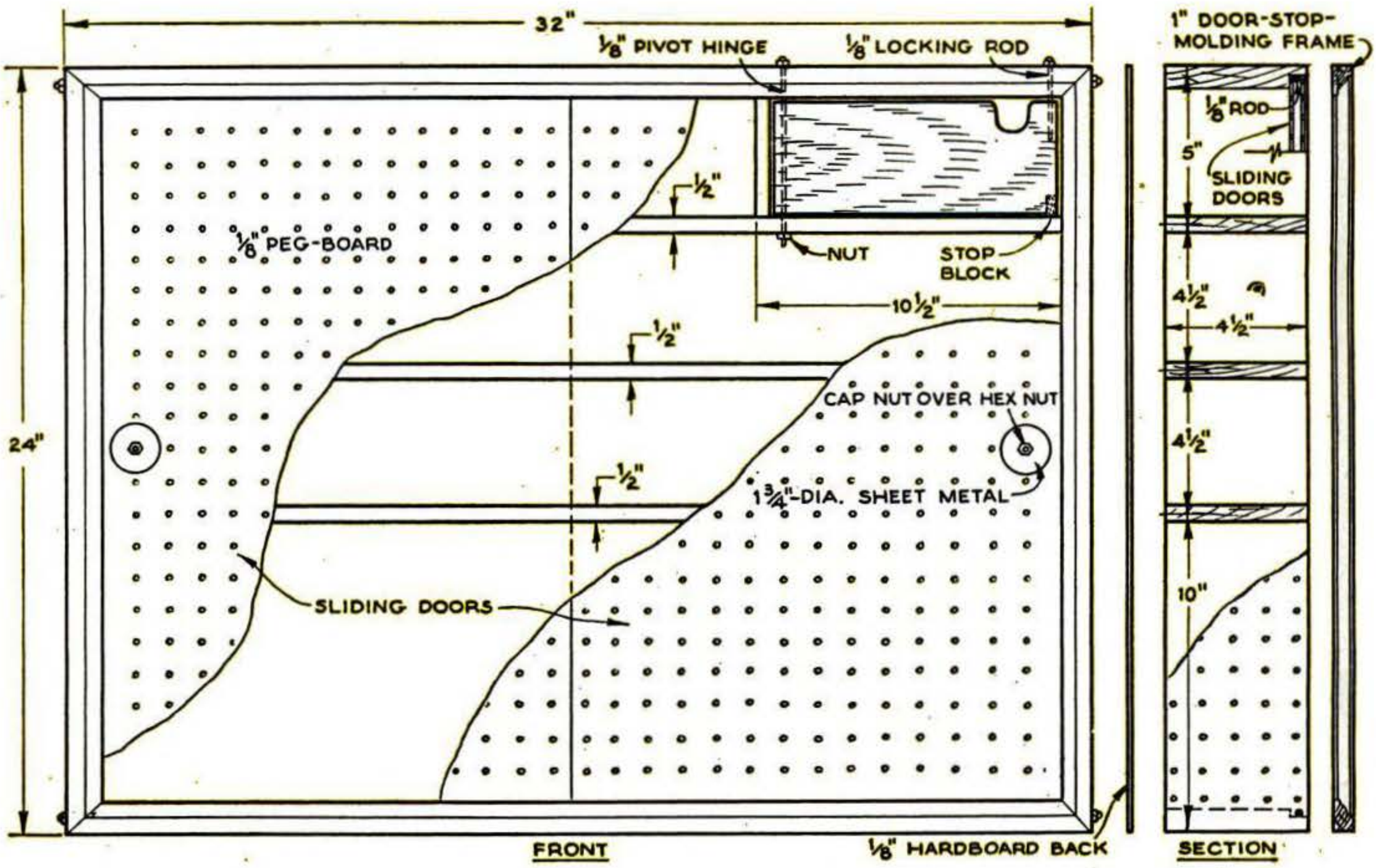
"AMPLE storage space" is what the real-estate salesmen always claim for their new homes. Usually the houses live up to the claim—with one big exception. That's the bathroom.

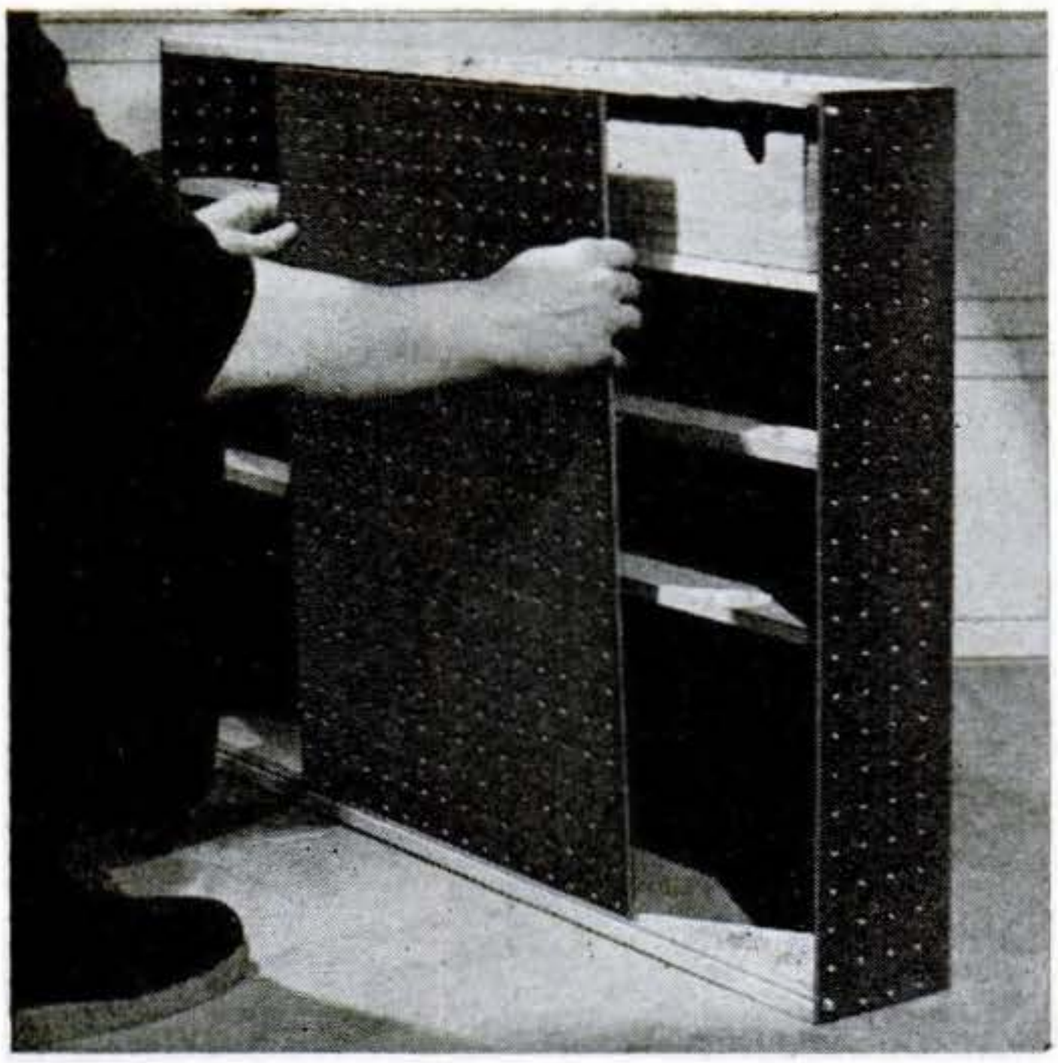
Take our bathroom for instance. It is 5′ by 8′ and had only the usual small medicine cabinet—one of those shallow chests that always look crowded even though you've only got a razor and a bottle of aspirin inside. As for storage space for cleaning equipment—brushes, cloths, cleanser—there just wasn't any.

These two wall units and the under-basin cabinet are my answer to the lack of bathroom storage. They utilize space that is otherwise wasted and they are easy to build. In fact, I had a lot more trouble photographing the cabinets in our little bathroom than I did building them.

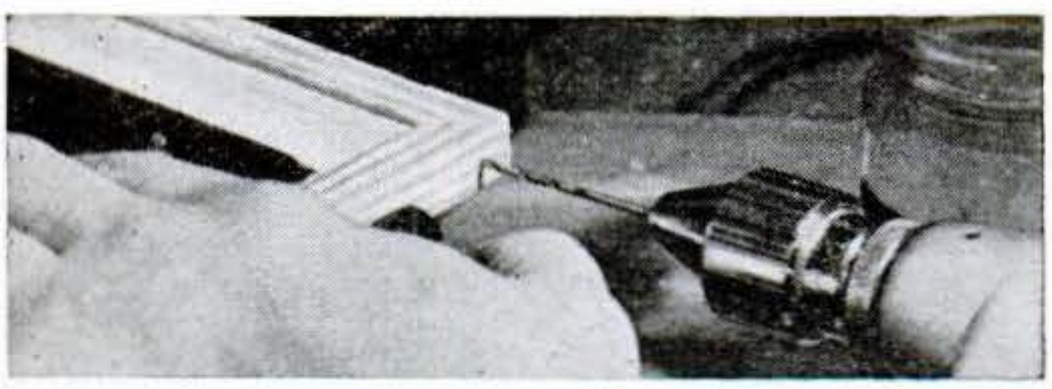
Wall units. I bought all the lumber for these for about $3 and had the rabbet for







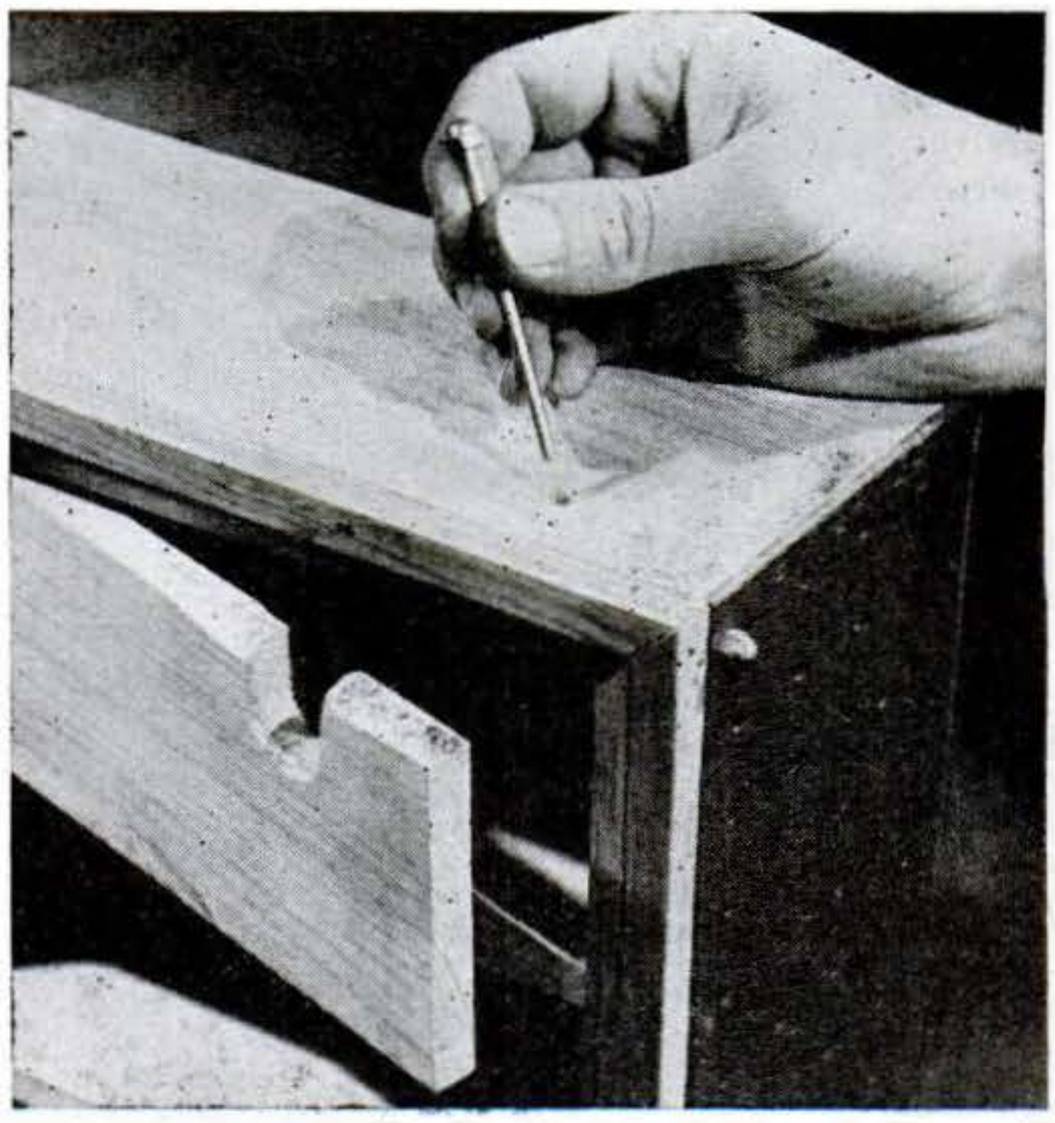
SLIDING DOORS are fitted after cabinet is nailed together and separator rods installed. Doors should overlap by only about ¼".



DRILLED HOLES a bit smaller than nails prevent splitting of wood. Make frames for cabinet face separately and tack them in place.

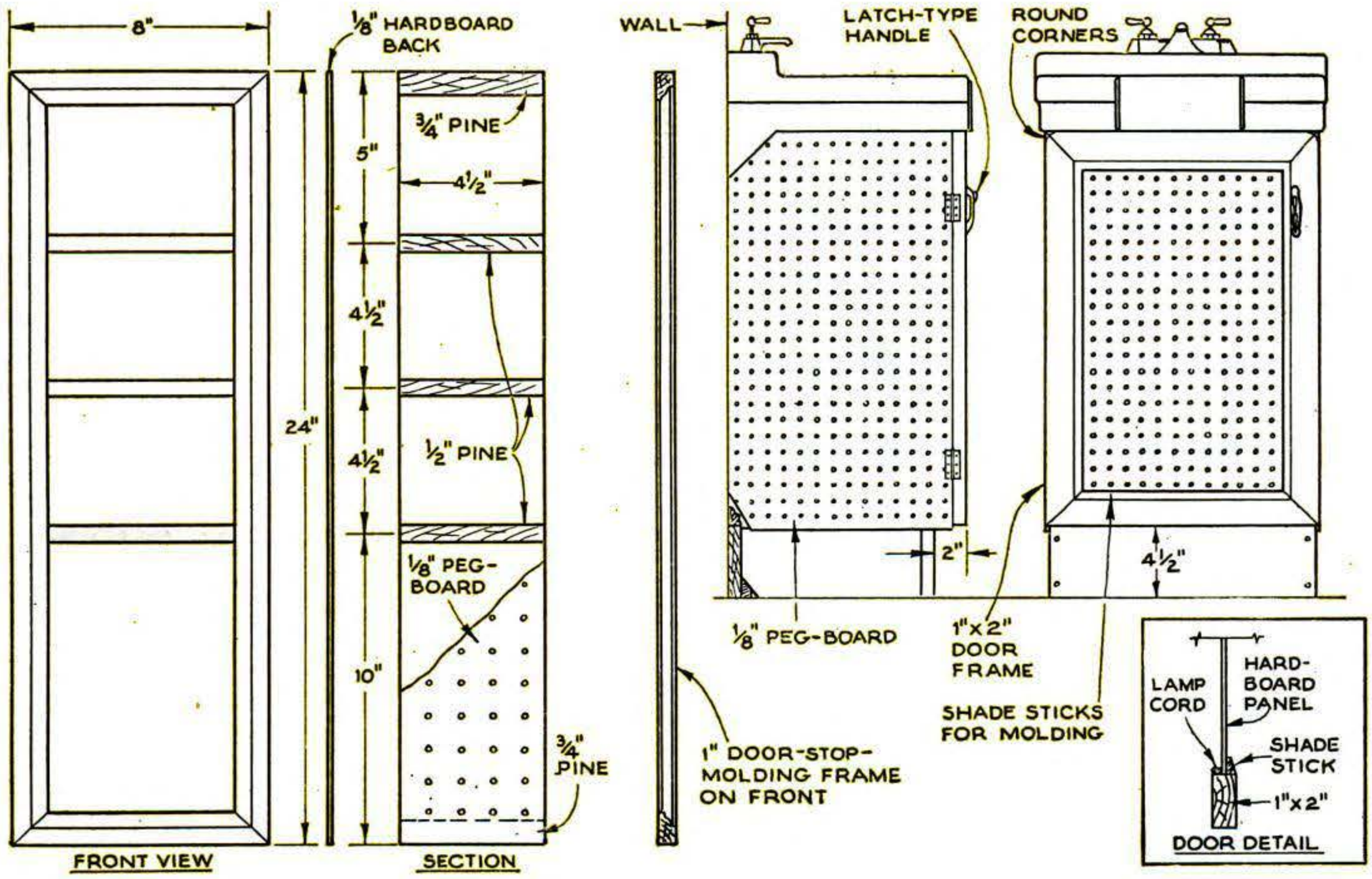
the sliding doors (they both slide in one rabbet) cut at the lumberyard. You can use solid ⅛" hardboard or the perforated variety known as Peg-Board, as I did.

The compartment in the upper right-hand corner of the larger unit has a secret lock. You can store poisons there to keep them away from children. The door can only



POISON CHEST is locked with ⅛" rod. Top of rod is threaded to take cap bolt that prevents locking rod from dropping too far in hole.

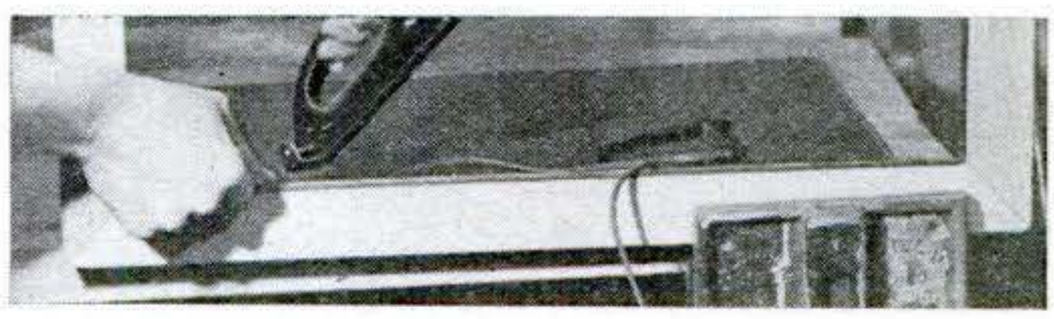
Copyrighted material



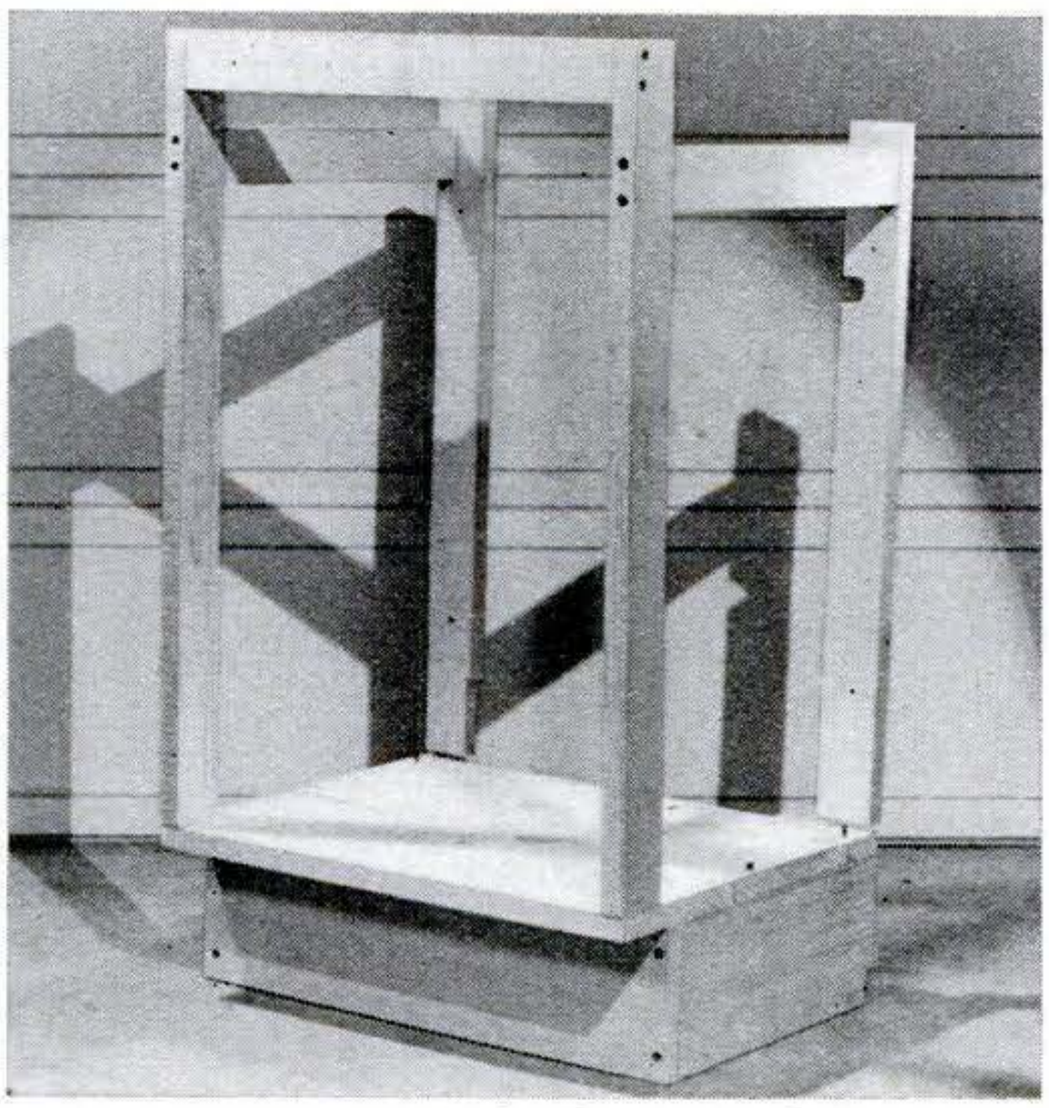
be opened after the locking rod is withdrawn from the top.

You'll need a 6-32 die and die stock to thread the curtain rods spacing the doors.

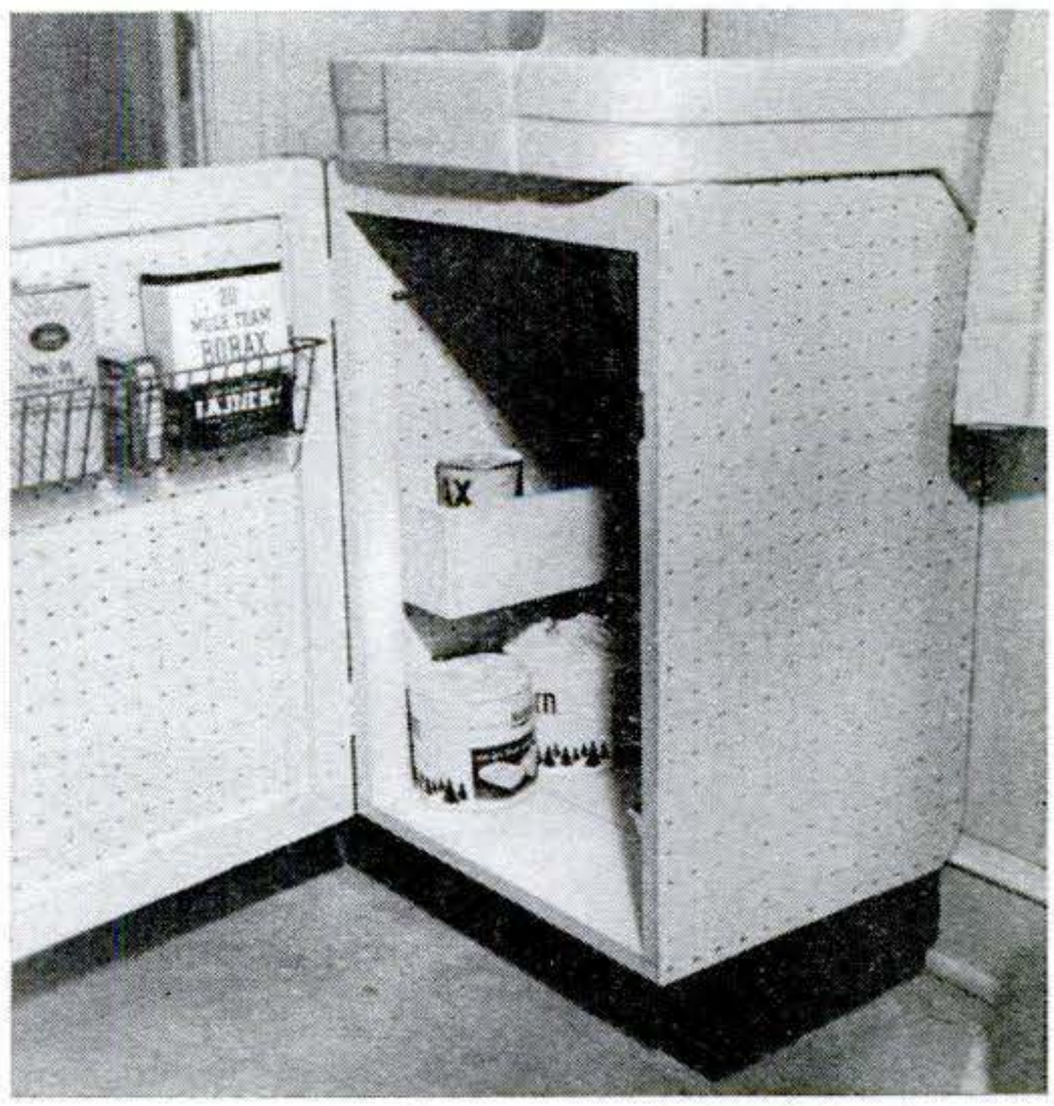
The under-basin cabinet, very handy to store cleaning supplies, is framed up from ¾" stock and finished to match. Be sure to leave access to the trap and valves. END



BACKSTOP MOLDING for hinged door of basin enclosure is plastic-covered lamp cord. Front molding is window-shade sticks planed flat.



BASIN ENCLOSURE is built around frame of one-by-twos. Unit is screwed to floor and wall. Right rear upright is notched for a pipe.



FINISHED CABINET has part of old dish drainer fitted on door to hold boxes of cleaner. Wooden rack holds other cleaning equipment.

Copyrighted material

How to Rig an Attic Ladder

It can go into a closet, stay on the wall or fold up out of sight.

This homemade ladder, 9′ long, hooks over header in attic hatch. Detached, it can be stored inside a nearby closet, which has a sloping wall under a gable (below). End of ladder with the hooks goes down near the eaves. A wooden turnbutton pivoted on the wall engages one rung to hold the upper end.

AN ATTIC you can't readily get into is about as handy as none at all. But even if the entrance to yours is a stairless hole in the ceiling, you needn't teeter acrobatically on a chair or stepladder. Instead, the answer is to rig a one-purpose ladder just to take care of attic access. It can be a simple bow ladder like the one shown here, or a fancy disappearing one as on the following pages.

Try a mock-up first. Hatchway sizes and floor-to-ceiling heights aren't standardized, and working clearances are often snug. So first take the dimensions carefully and make a scale drawing. If you decide on a folding ladder, better make a full-size mock-up of it with a couple of sticks hinged the way the ladder will be. Fit this to the hatchway and follow through the motions to make sure there is clearance where necessary.

Counterweight lightens it. There's no need to hoist up the full weight of a disappearing ladder. You can counterbalance it with weights, a light rope and one or more pulleys.

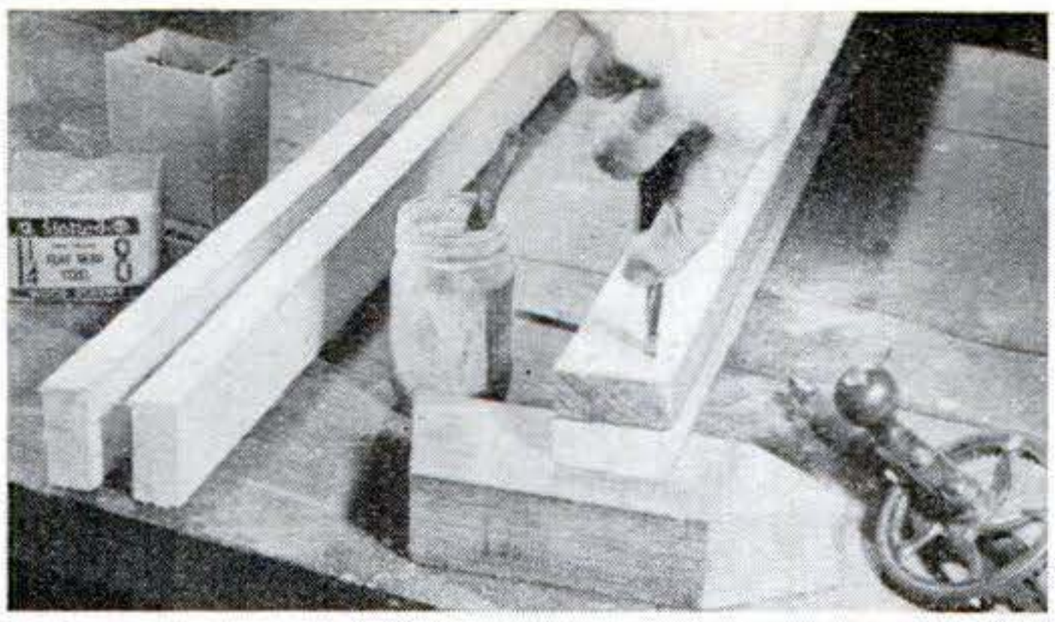
The weight need not hang over the hatchway nor anywhere near it, for you can run the rope over pulleys to any convenient spot, preferably near an attic wall. If height is limited, perhaps you can attach the counterweight rope higher up on the ladder. The weight then won't have to move as far, but will have to be heavier. Another dodge is to put a pulley on the weight itself, as in a simple block and tackle. The weight will have to be twice as heavy, but need travel only half as far.

Don't counterbalance out all the ladder's weight. Leave it just a bit heavy so that it will stay down after you've fished it down with a pole or cord.

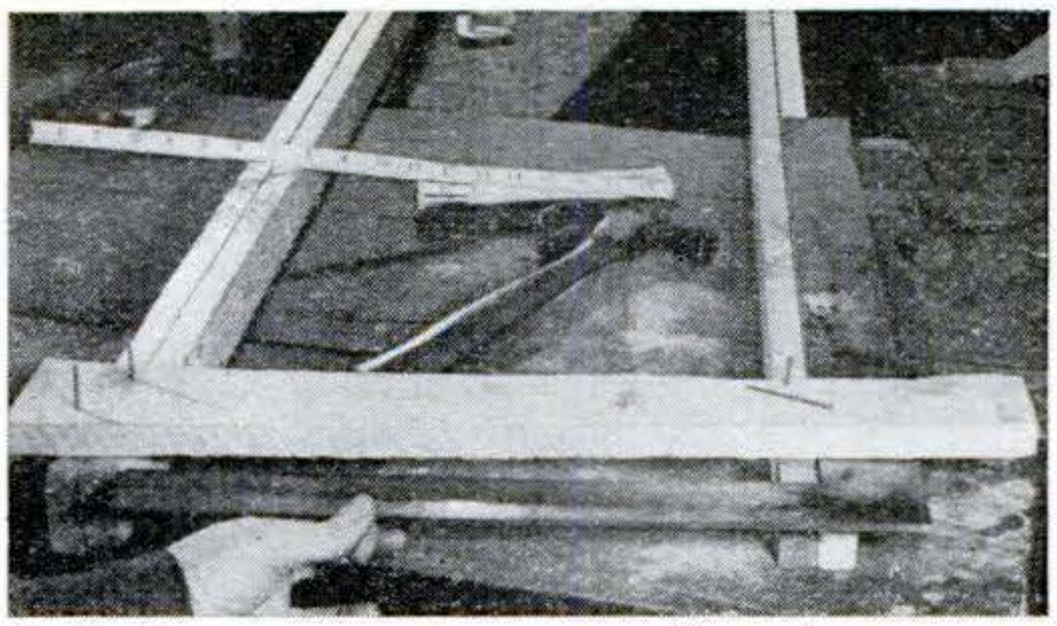
Build for safety. Even if you use it rarely, the ladder must carry all your weight at once, plus anything you carry. So use screws rather than nails, and don't overlook the enormous holding power of good glue. Buy hinges that are on the large side. Be sure the screws that hold them are sunk deeply into sound wood.

If yours is to be a removable ladder, use

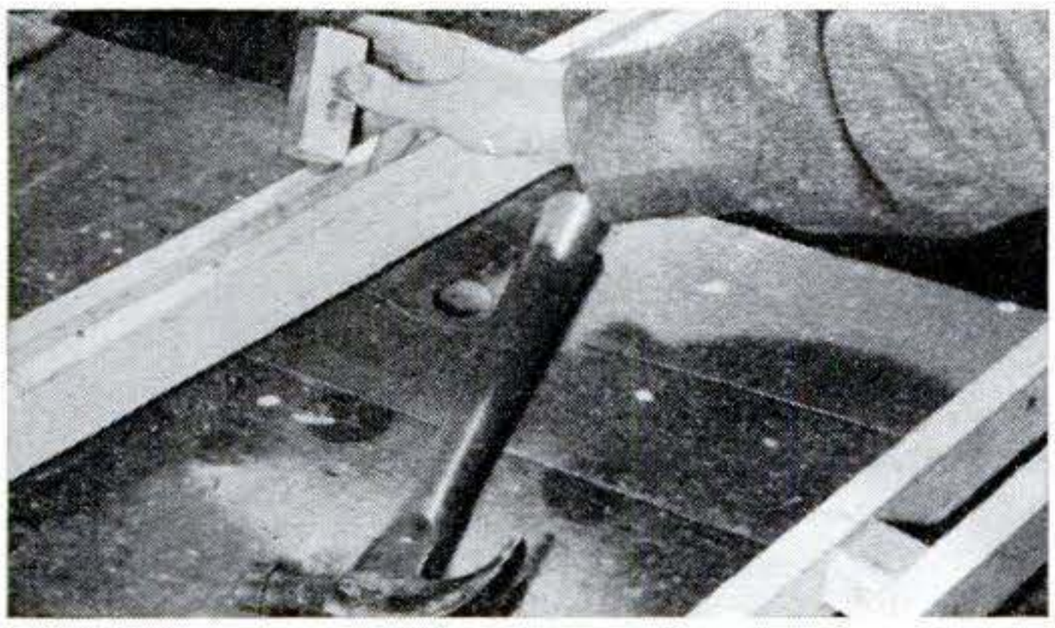
Copyrighted material



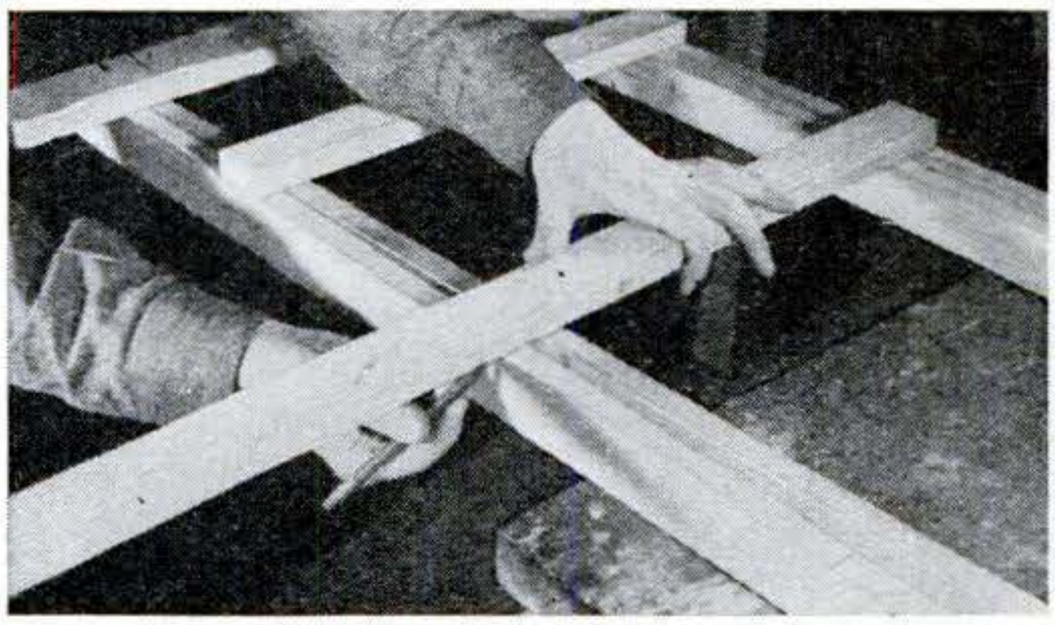
1 Cut four lengths of 1" by 2" finished furring strips (actually 13/16" by 1⅝") to make the side rails. Apply glue for 2" up from ends and fasten each pair of pieces together like this, with two wood screws at each end.



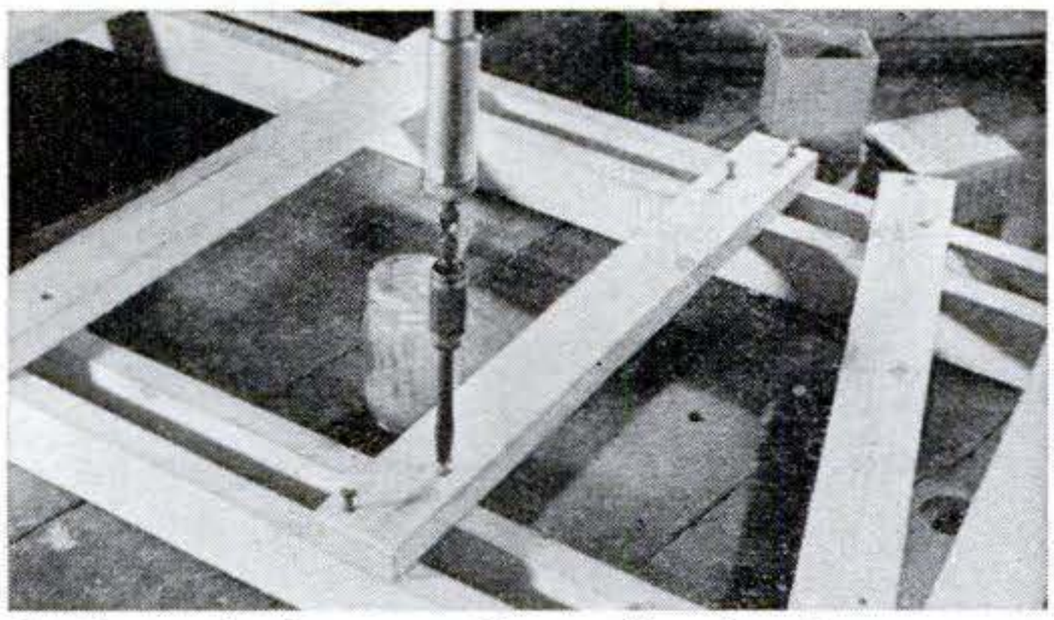
2 Nail scrap stock across side rails to space them 16" center to center. Check for squareness across the ends. Tack similar piece at the other end, driving all nails only part way for easy removal later.



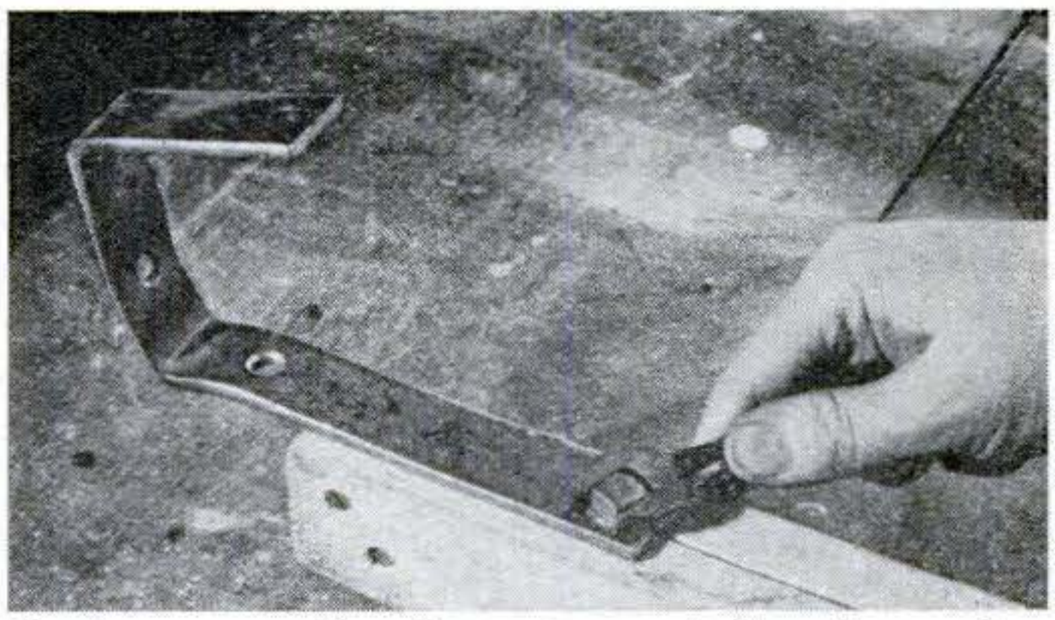
3 Find the middle of the rails by measuring. Spring each pair apart and insert at the middle a temporary spacer block about 1¼" thick, to give rail pieces a slight bow (the bow adds strength). Lay out rung locations 10" apart.



4 Rung length varies slightly because of bowing. The quickest way to get rungs right is to lay the stock (1" by 2", like rails) at each rung location and mark it off as above. Identify each rung by number.



5 Spread glue on edges of rails where rungs go, and on undersides of rungs. Fasten each rung with 1¼" wood screws, one in each of four rail members. Stagger the screws as shown, and countersink them.



6 Open out bends in 6" angle brackets a bit and make extra bend to hook over hatchway header. Attach each hook with at least one long through bolt and nut and one heavy wood screw. Bevel lower ends of rails to stand flat.

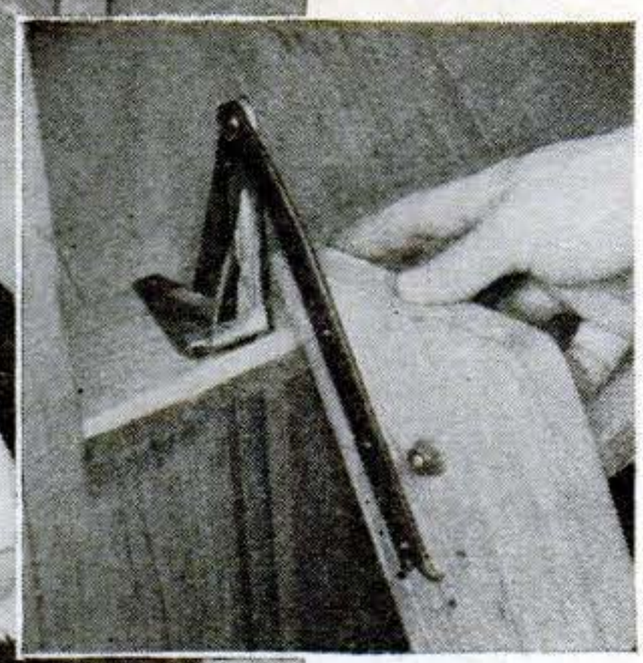
hooks or clips that will hold it securely to the hatchway header. Beware of a loose ladder simply set in position; if the feet slip, so do you.

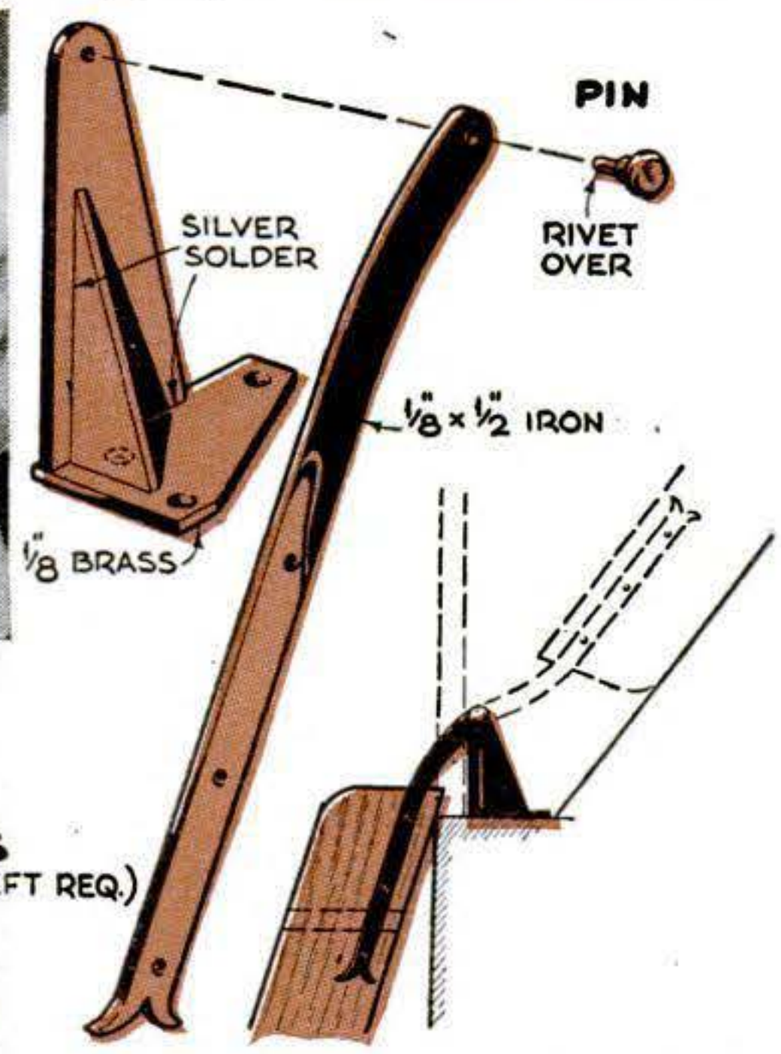
To avoid the need for stepping on a chair to open the hatchway panel, consider hinging it at one end and securing the other with a cupboard catch, which can be released with a rod or pole. A loose panel, simply laid on a rabbet inside the opening, can be pushed upward at one end with a take-down ladder. Once this is hooked over the header, you can go up a couple of rungs and remove the panel.

An attic ladder can also be built to slide up and disappear. Turn the page.

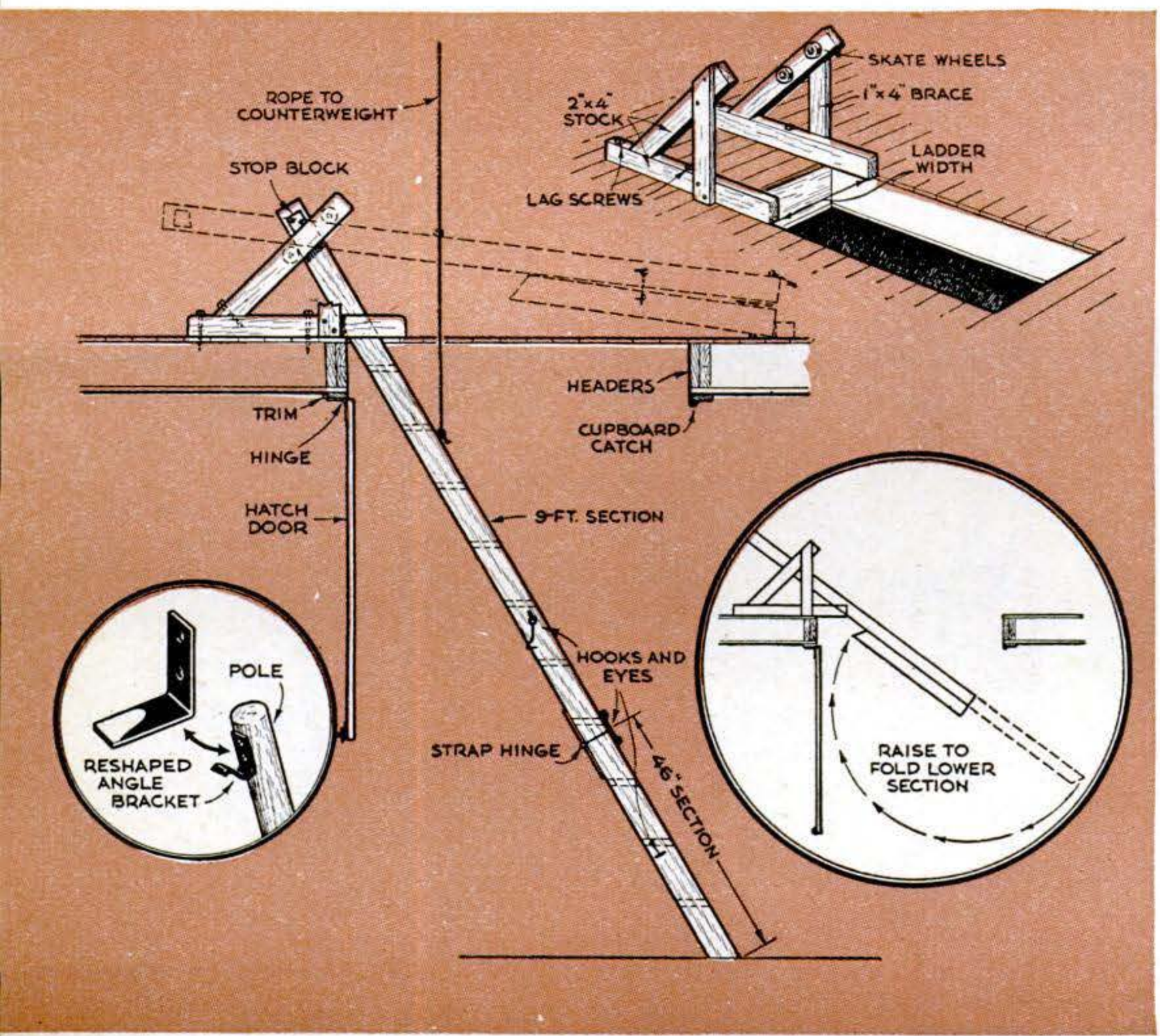
Copyrighted material

Even though your attic-access





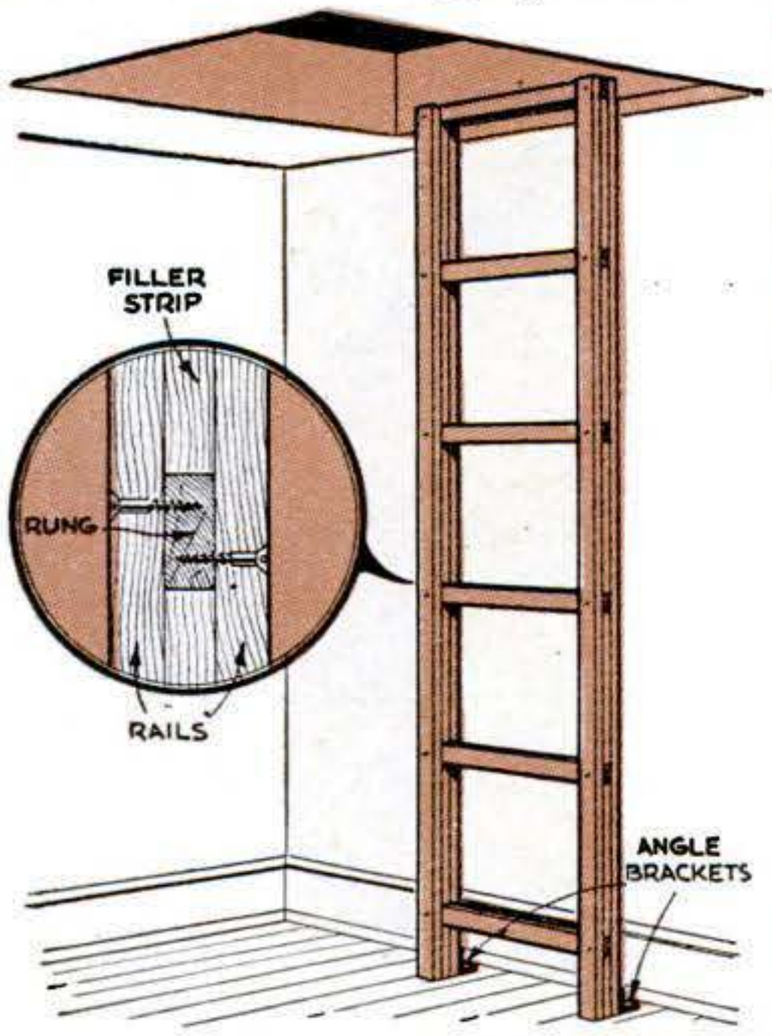
Tuckaway ladder. Some houses without attics have storage space accessible only through the upper part of a wall. To reach such a closet, W. A. Conway of Macedonia, Ohio, built this ladder. He used 7/8" oak, mortising the steps into the rails about 3/16". Rungs are further supported by rail-to-rail metal rods threaded at both ends for nuts. Special hinges pivot the ladder back of the closet-door line. They were made of brass plate silver-soldered together. Similar hinges could also be welded up from steel plate.



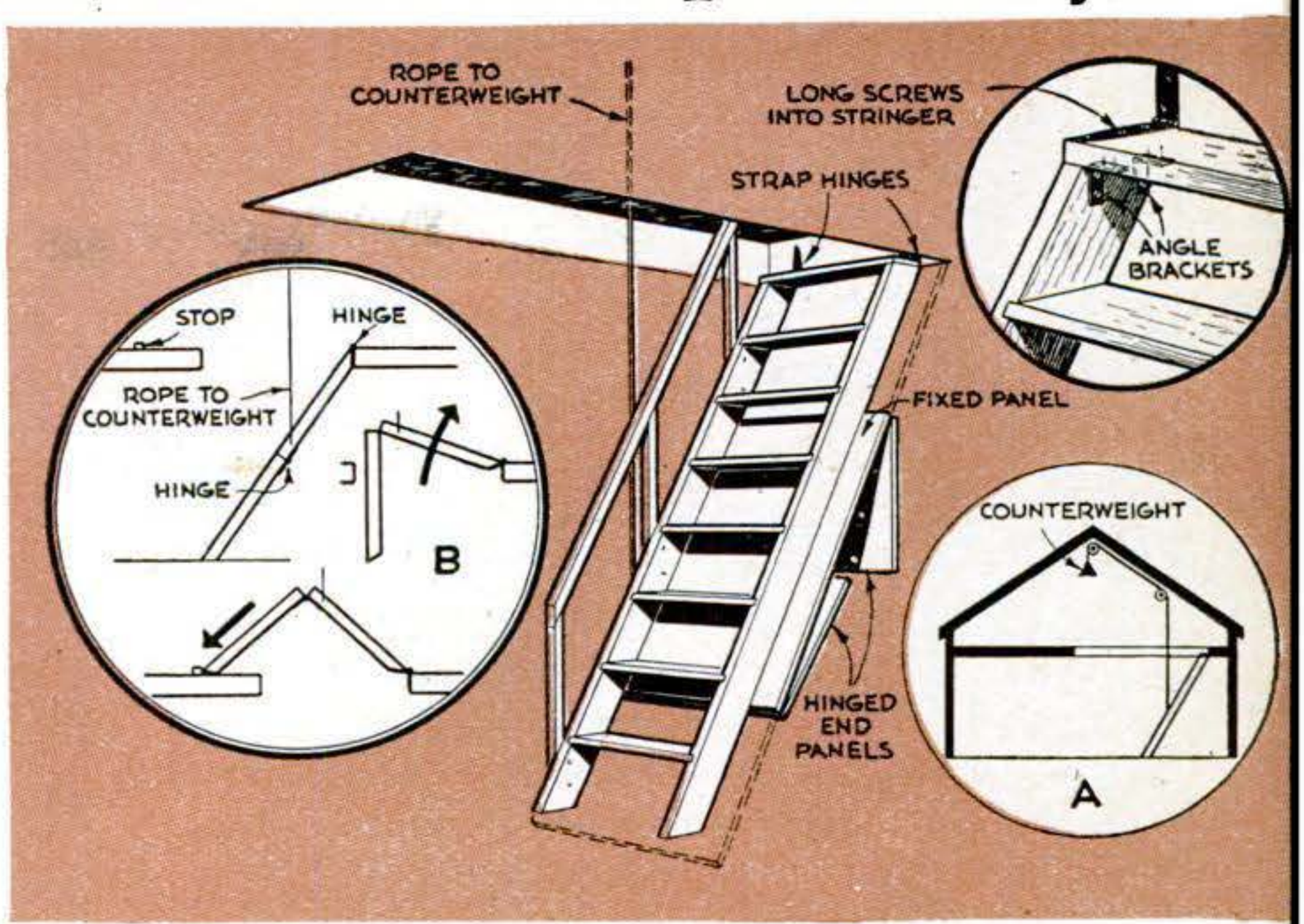
Sliding ladder is raised by aid of counterweight and folded to fit through the hatch. For room height of 8½' it requires an access hatch at least 42" long. Ladder can be made of 1⅛" by 4" stock with steps 11" apart let into grooves. Mount skate wheels with one long wood screw each. The counterweight should leave ladder a trifle heavy. Hinges holding the lower section are on underside, so load cannot buckle the ladder. The cupboard catch that secures hatch door can be released with the pole used to raise and drop the ladder.

Copyrighted material

problem is tough, chances are that one of these rigs will do the job.

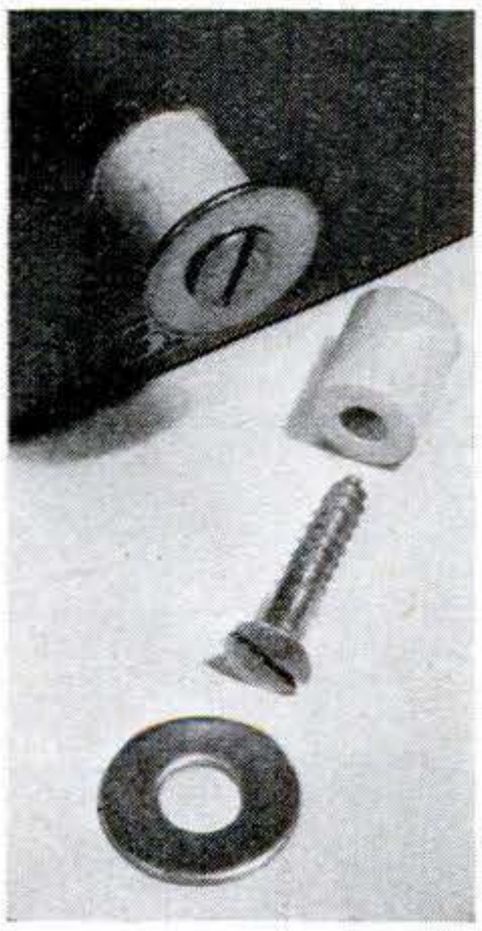


A wall ladder permanently mounted is ideal if the attic hatchway is over a closet, and can be unobtrusive in a hall if painted the same as the wall. Furring strips make the rails. Vertical pieces inserted between the rungs help bear the load. Fasten ladder to hatch header and the floor, setting it a bit off the wall so that toes won't make scuff marks.



Hinged one-piece ladder is feasible only where hatchway is long enough to accommodate its full length. It can be counterbalanced as shown at *A*. The middle-hinged ladder at *B* requires less hatchway area. Since both ladders are mounted by hinges at the top step, hinge screws should be run into the rails, and the step should be fastened with husky iron angle brackets. An open ladder would be suitable for access to top floor of a garage, but in a dwelling the hatchway may be closed with a three-part panel fastened to underside of the ladder. End sections must be hinged to permit free action. With the ladder up, they can be swung up and secured with cupboard catches.

Drawer Pulls Made from Dowels



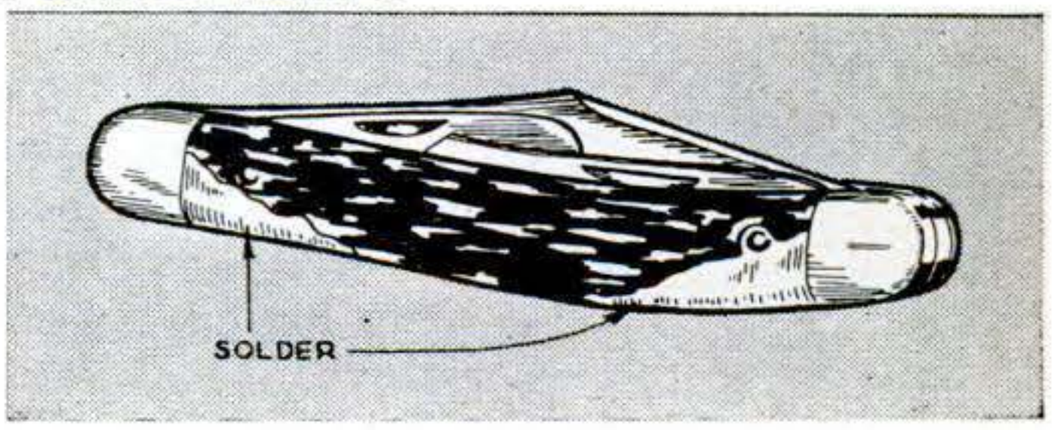
HERE'S an easy way to make pulls for small workshop drawers. Select flathead wood screws that fit the washers almost flush. Drill the dowel to take the screws and then saw the dowel into ½" pieces. Using bolts instead of screws through the drawer faces will make heavy-duty pulls.—*Will Thomas, Buffalo, New York.*

Newspaper Masks Glass

WHEN painting sash, use pieces of newspaper to mask the glass. Cut the paper to fit, wet the paper and smooth it on the glass. It can be peeled off when the paint is dry.—*J. W. Rocke, Atkinson, Neb.*

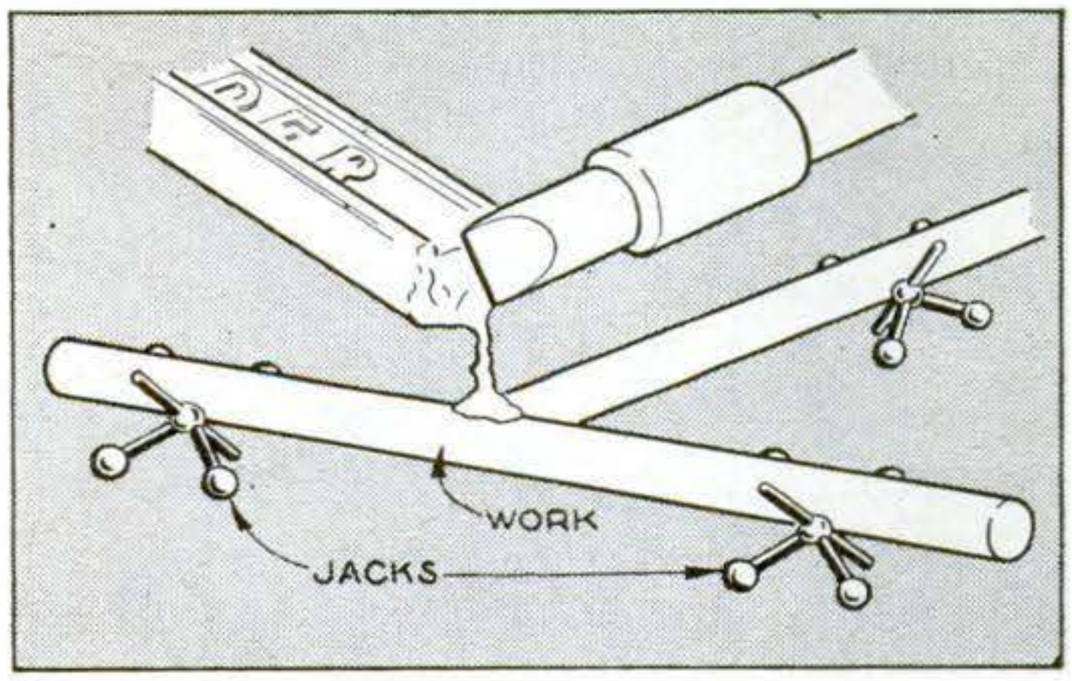
Solder Repairs Chips in Handle of Pocket Knife

A CHIPPED or broken bone handle of a pocket knife can be repaired with solder. Clean the brass backing plate and then build up solder to fill the space where the bone is broken away. Smooth off excess solder with a file.—*A. L. Elliott, Sacramento, Calif.*



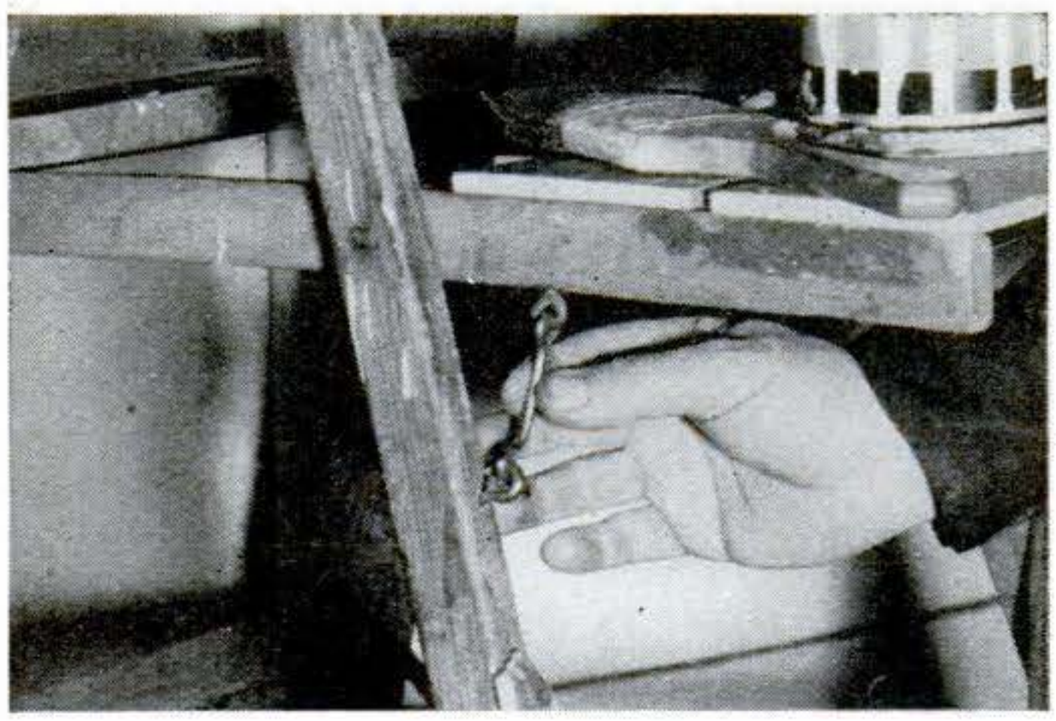
Copyrighted material

Metal Jackstones Aid Soldering



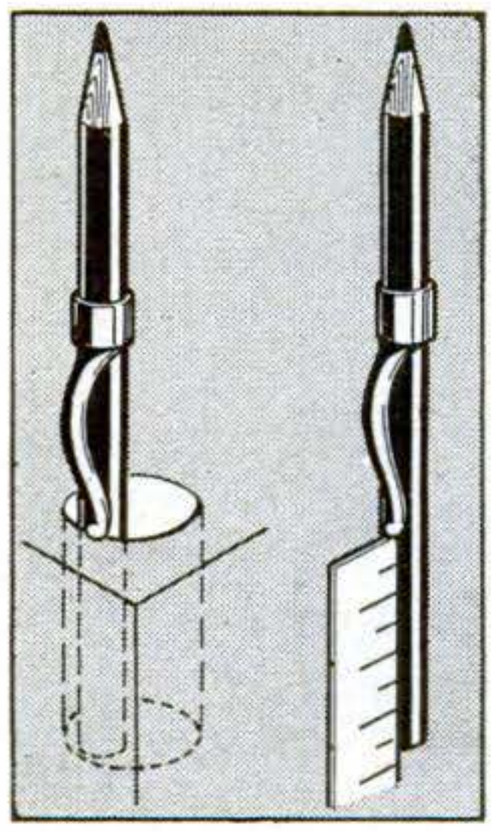
SMALL round stock is easier to solder if you support it on metal jackstones that you snitch from the kids' toy box. They hold the work off the bench, giving the solder a chance to flow completely around the joint. —*Howard E. Moody, Upper Jay, N. Y.*

Hook Secures Ladder Shelf



A HOOK and eye—the kind used on screen doors—will prevent tipping of the folding shelf on a stepladder. The ladder itself will be more rigid if a hook is installed on each side of the shelf.—*Carlton G. Bucher, White Plains, N. Y.*

Pencil Serves as Depth Gauge

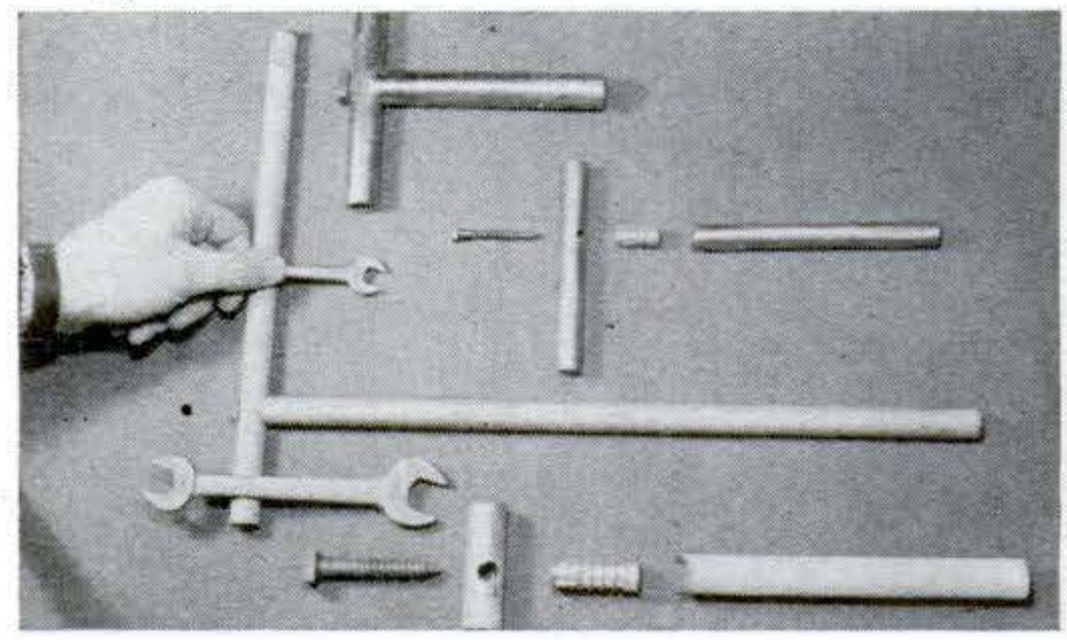


A PENCIL fitted with a dime-store pocket clip can be used as a rough depth gauge for many purposes. Rest the unsharpened end of the pencil in the hole and push the clip down until it touches the top of the hole. Then measure from the end of the pencil to the clip—*Walter F. Dierken, Dayton.*

Shield Helps Pick Bent Corn

A POINTED shield bolted to the tool bar ahead of the rear wheel of this tractor straightens bent corn, keeping the wheel from grinding it down and enabling the mechanical picker behind to pull the ears. L. H. Maresh, Granger, Tex., made the straightener from a triangular piece of sheet metal, bending it to suit the wheel.

Lag Screws Join Thin-Wall Tube



THIN-WALL conduit or copper tubing can be joined at right angles with lag screws and lead screw anchors. Use a hacksaw and a round file to shape the end of one piece. Drill a hole in the other piece. Insert the anchor in the shaped piece and join the two tubes with a lag screw through the hole. Screw anchors and expansion plugs come in sizes that will fit most tubing diameters. If you get some that won't quite fit, they are easy to file down.—*W. Haase, Hartford.*

Copyrighted material

Broom on Wheels Sweeps Your Lawn

Retire your rake when the leaves start falling. This homemade sweeper makes the old raking chore a pushover.

By Howard G. McEntee

NOBODY enjoys raking leaves, but I managed to live with the chore until a neighbor bought a lawn sweeper. He merely pushed it along. A rotary brush, driven by the wheels, whisked up grass and leaves into a cloth catcher behind it.

Here, I thought, was the answer to a lazy man's dream. Only the price tag kept me awake.

"That brush goes around about as fast as the blades of a lawn mower," I mused.

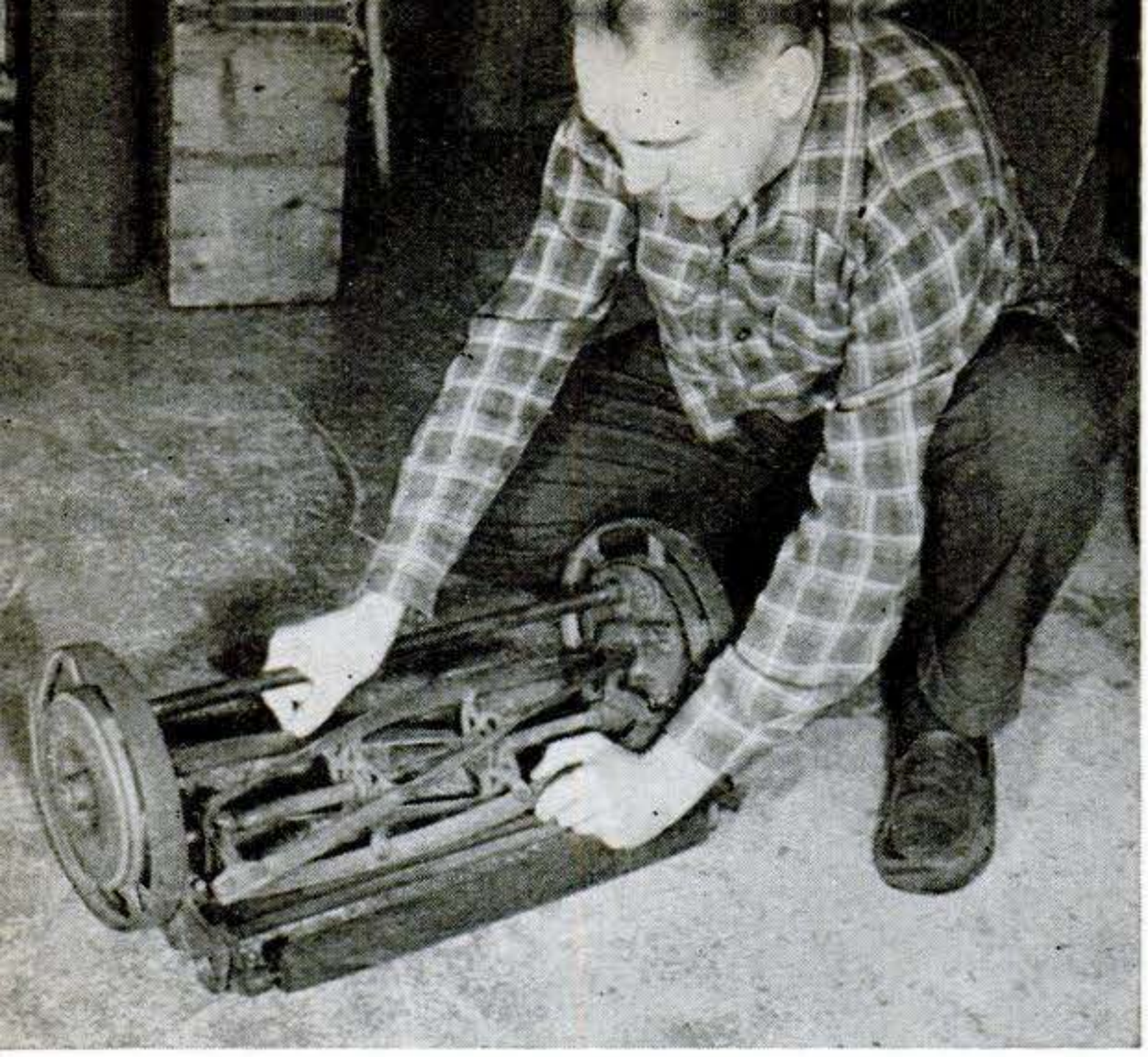
"Uh-huh," said the owner. "You know, I can pick up the whole yard in 12 minutes. Beats raking, doesn't it?"

"But the brush runs opposite to the way a mower reel does," I went on.

"Yeah. I use it for grass, too. Instead of emptying

LOOK, NEIGHBOR—NO RAKE. You make a clean sweep of lawn debris just by pushing this converted mower along. A rotary brush driven by the wheels leaves no leaf unturned.

Copyrighted material



THIS OLD MOWER didn't look like much, but had all its working parts. Reel bearings need not be perfect, because adjustment of the brush is not as critical as that of mower reel.

a mower bag every few yards, I keep moving, and sweep up later. Faster, and easier on the back."

I took the plunge. "Wonder if I couldn't make a sweeper out of an old mower."

"Not a chance. You'd need new gearing to make the brush turn the way this one does. Besides, a mower isn't wide enough. Don't waste your time," said my pal, and swept off.

So I tried it. Shopping around, I found a husky old mower for a buck. It had no handle, but the reel bearings, wheels and pinions were okay. Next, I bought a set of replacement brushes sold for factory-made sweepers—two V-shaped metal strips, each with two rows of bristles crimped into it. Another kind, four to a set, has a single row of bristles set into a wooden strip. This kind would probably have done just as well.

Taking apart the old mower, I cleaned the parts in kerosene. I took the bearing cones, ratchet pawls, and pinions off the reel shaft, removed the shrub bar, roller and roller brackets, and wondered what next.

Big brush, small frame. My armful of bristles would make a rotor 10″ in diameter, but the reel bearings were only 3″ above the ground. And the shrub bar, that husky thing out front that bends the dandelions down, was only 4½″ from those same bearings.

Once the shock was over, I got an idea. Turning both side plates upside down would put the reel bearings much higher. It wouldn't move the shrub bar any farther out, but maybe I could trim an inch off the brush diameter and still get by.

How to squeeze 24½″ of brush length between the sides of an 18″ mower was the next problem. It was easy enough to cut a longer shrub bar from stock the same diameter as the old one. On mowers in which this bar is clamped by setscrews, that's the whole job. Mine had to be different, making me shoulder down and thread both ends.

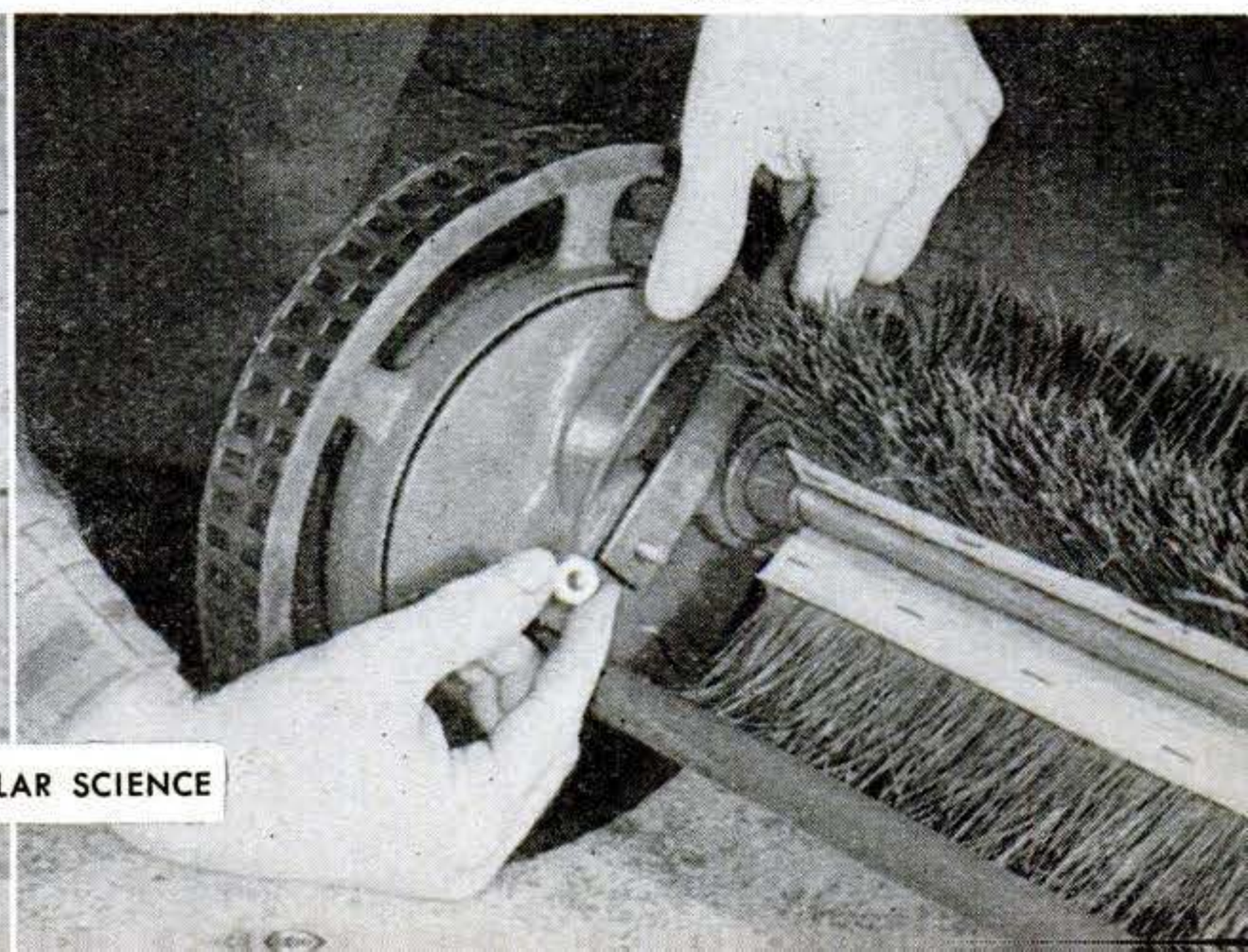
To hold the side frames apart at the back, I cut a length of angle iron square at both ends and clamped it in with a long rod threaded for nuts. The rod goes where the roller-bracket bolts used to be.

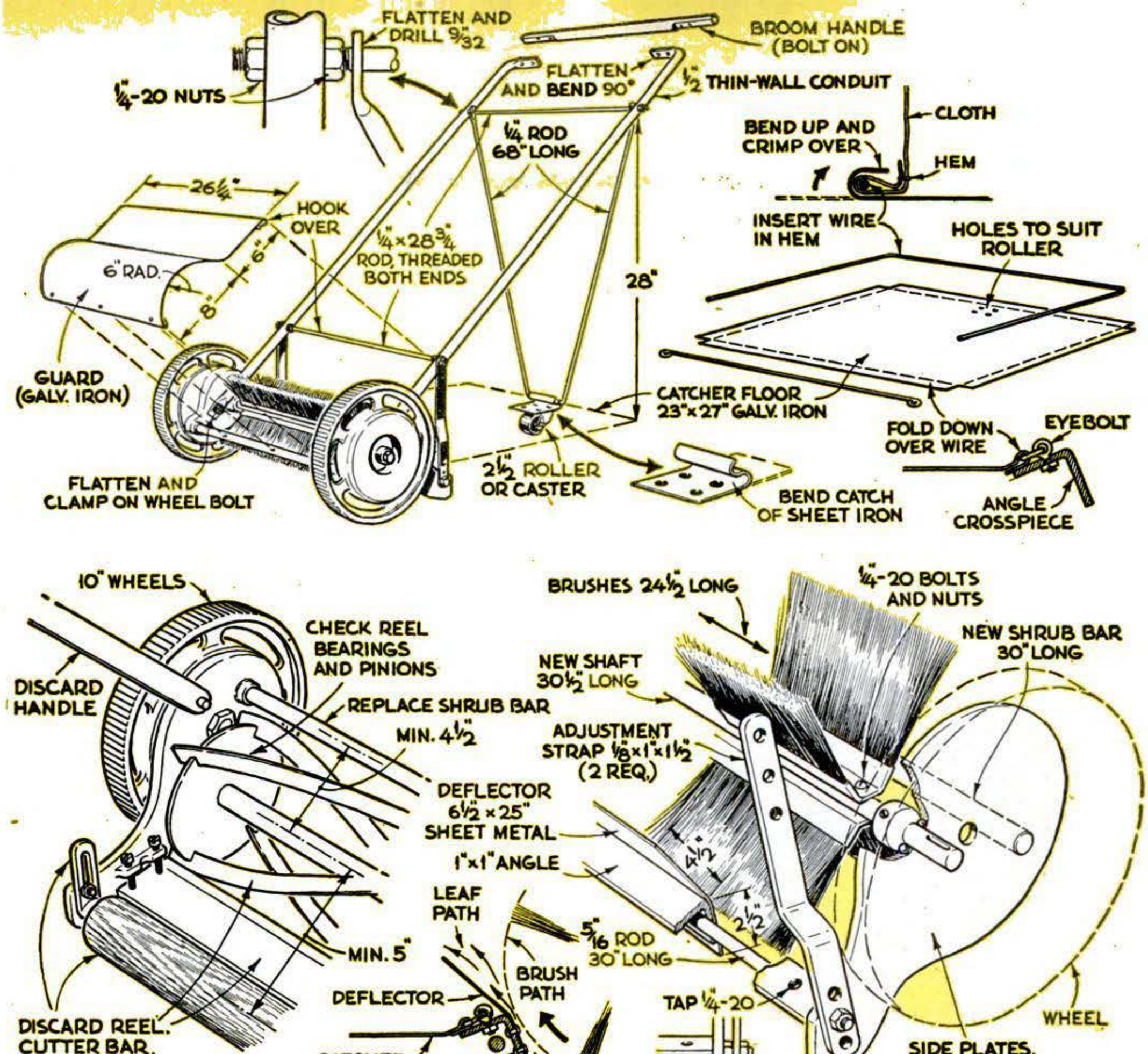
Shaft is close copy. The only fussy part of the job was making a new shaft for the brush. It had to be the same diameter as the old reel shaft, for the bearing cones, pinions and pawls had to fit on it. The little pawl slots had to be spaced so that the pawls would line up inside the pinions.

End milling would have done a neat job on the slots. But I made them by drilling a

NEW EXTRA-LONG SHAFT was made for the brush. Pawl slots were filed out to duplicate those on old shaft. Two-section brush was attached with three bolts through the shaft.

BARBERING JOB was done to make brushes pass the shrub bar. The bar was used as a guide in clipping the bristles. Flattened ends of handle slip on wheel-retaining bolts like this.





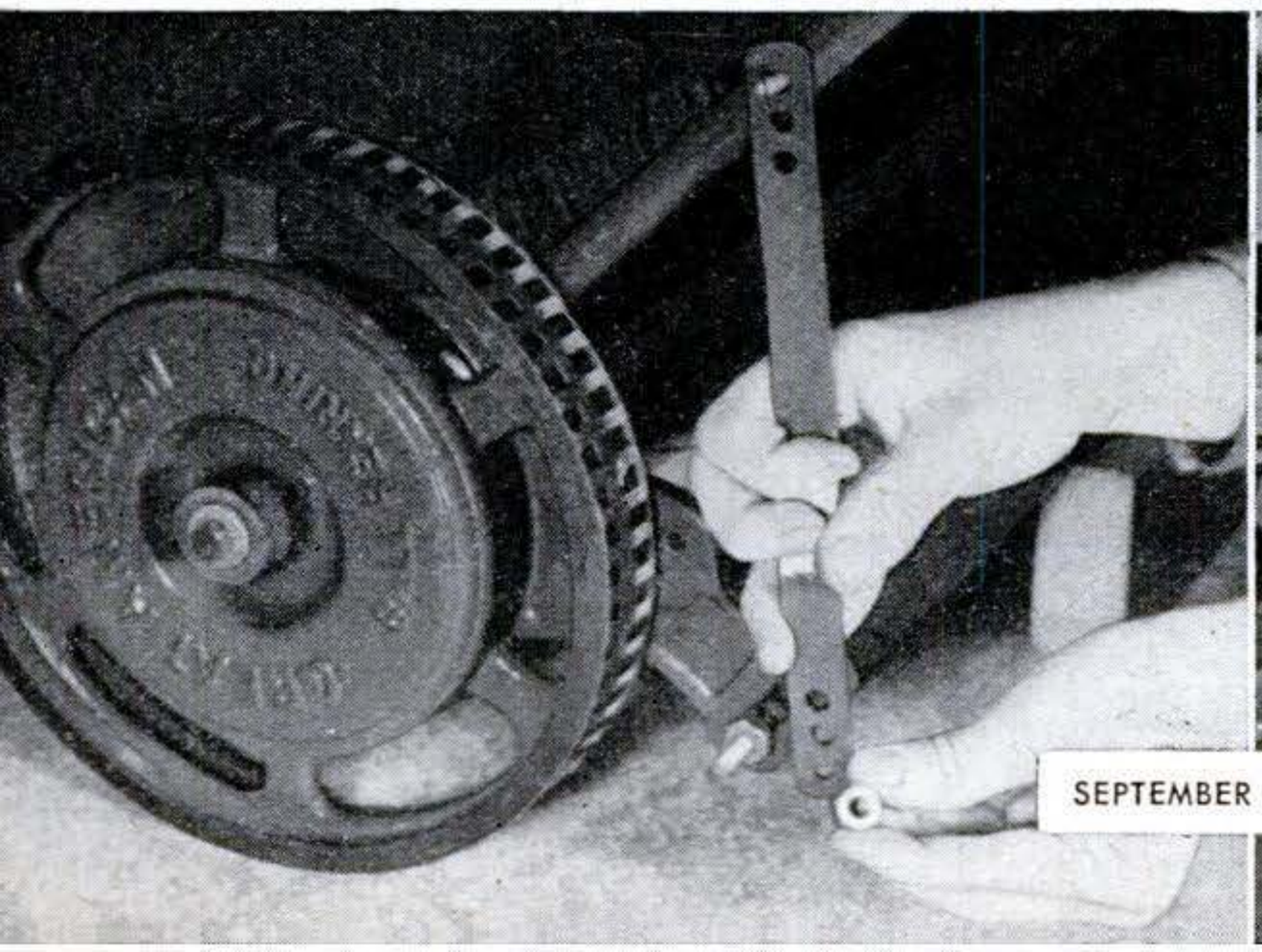
row of holes, filing between, trying the pawls often, and keeping my fingers crossed.

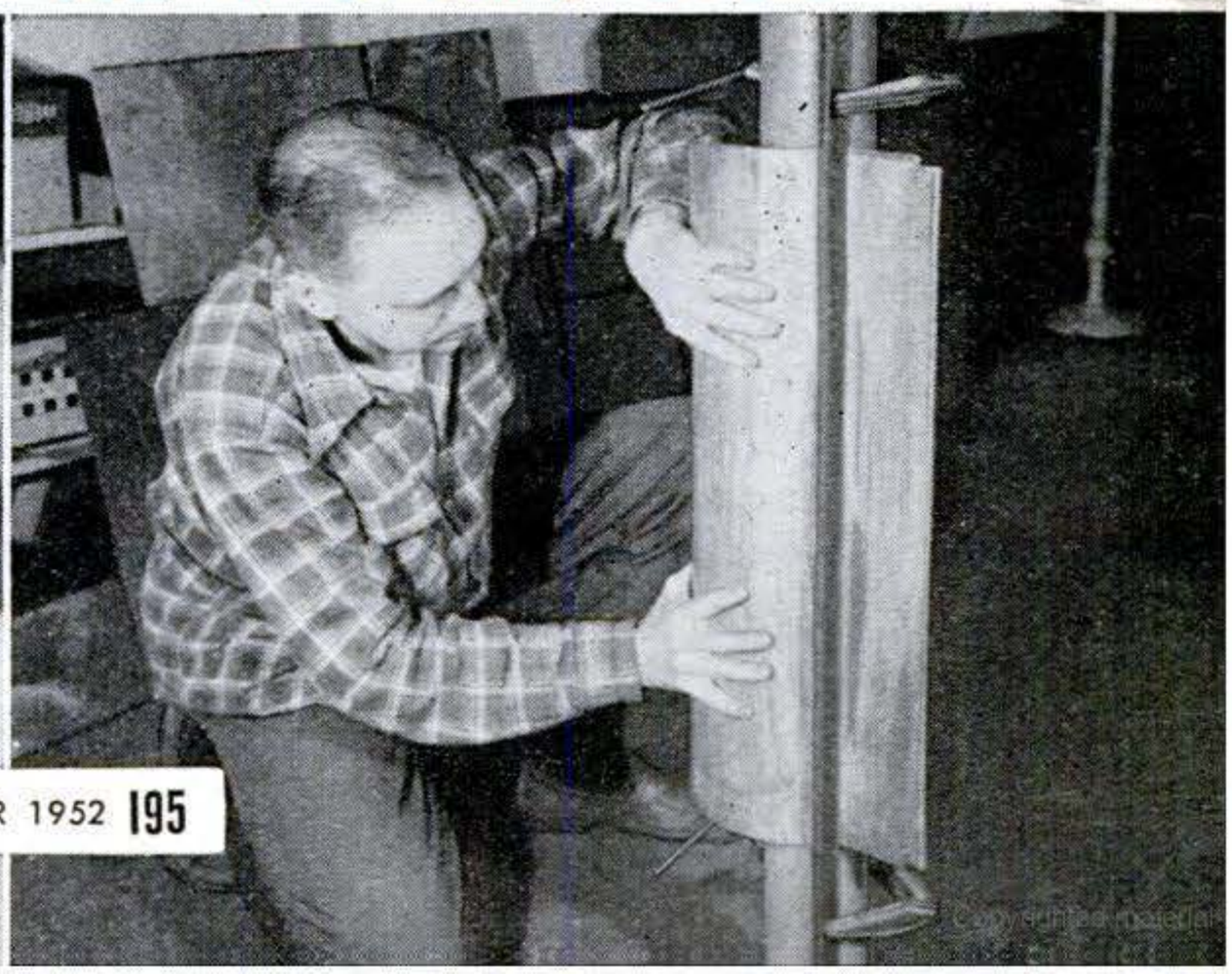
Three holes were drilled through the shaft for ¼"-20 bolts to hold on the brushes. The assembled job looked like business, even if it wouldn't turn past the shrub bar.

After trimming the bristles so that they could turn, I put on the pawls, pinions and wheels. The brush turned—but on the pull, not the push. Switching the two pinions around, however, made it turn forward, like any mower reel. For smooth running,

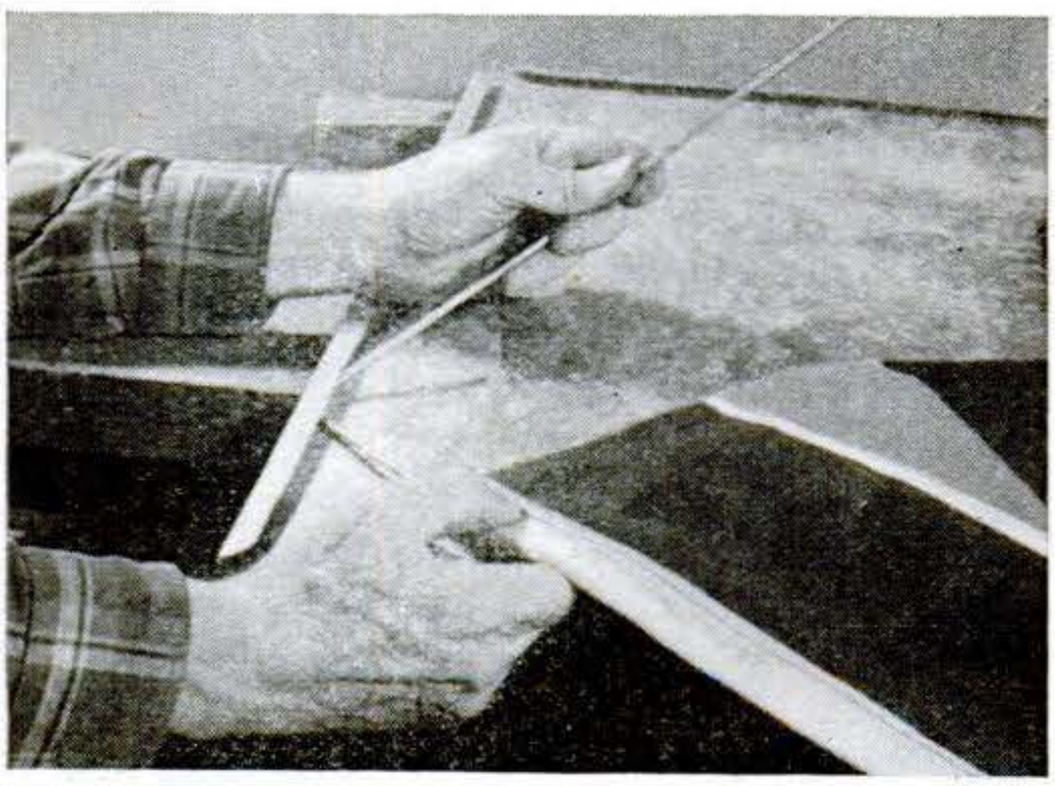
BRUSH HEIGHT above ground can be altered by two straps like this. They link the lower handle-bar rod to the 5/16" rod joining the side plates. Six holes provide adjustment.

SMOOTH CURVE was shaped in the sheet-metal leaf guard by clamping it to one of the lally columns in the cellar with a length of angle stock, and then bending it around.

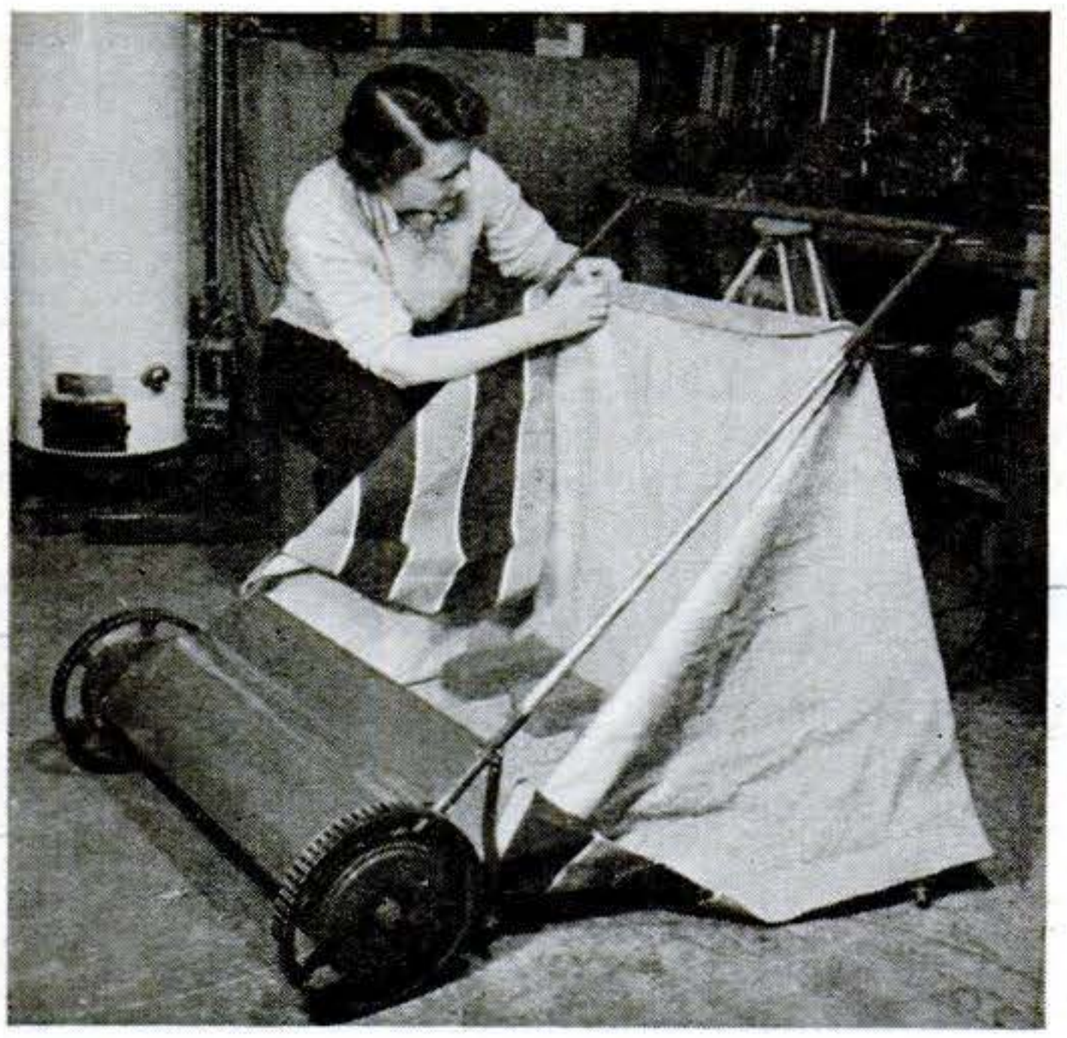




CATCHER FLOOR is cut from galvanized iron with a bending margin all around, as in the drawing. Edges are then turned up over a ¼"-thick iron bar clamped on top of the sheet.



REINFORCING WIRE bent to shape of the floor is pushed through hem of the bag canvas. Wired hem is then slipped under turned-up edge of floor and, after sewing is done, crimped in.



WITH FLOOR IN PLACE and handle blocked up to pushing height, the canvas is draped over handle rails and upper rod and pinned. Handle and cross rod have to be removed to slip the canvas off for sewing on a machine.

the little pawls must of course have their curved faces turned the way the brush goes.

When nobody was looking, I ran this contraption over some leaves. It threw them in every direction, mostly up.

Routing the traffic. Some leaves were shot back under the angle-iron crosspiece. To stop that, I riveted on a bent strip of galvanized iron and set it at a tilt-back of about 25°. It takes a nimble leaf to get under that.

Two pieces of thin-wall conduit were flattened at both ends and bent at the top to form the handle rails. Through these run two ¼" rods, one up near the wooden handle, the other a little above the wheels. This one holds the upper edge of the leaf guard, as well as two adjustment straps. With the guard on, any leaf not landing in the catcher just makes another trip around.

Catcher rides on roller. The sheet-iron catcher floor, hung on the deflector bar with eyebolts, is supported on a roller at the back. I bought one made for a sweeper; but a husky caster would do, or even a slice of rolling pin mounted in a homemade U-bracket. A wishbone bent from ¼" rod pivots on the upper cross rod and snaps into a homemade catch fastened above the roller. This lets me fold up the catcher for storage.

It's in the bag. Awning canvas 32" wide was hemmed on one edge. Then I bent heavy galvanized-iron wire to fit the catcher floor, which I had cut with a turnover margin all around. I slid the bent wire into the hem and slipped this reinforced cloth edge into the bent-over edges of the catcher floor. With the sweeper handle held up at working height and the adjustment straps at the lowest position, the canvas was pinned in place for sewing.

This was done on an ordinary household machine with an upholstery needle and thread. With a little help, it got through the tough spots where three thicknesses lapped.

The bottom hem was again set into the floor and the metal clinched down over it. Then the bag was slipped over the hand rails and the cross rod pushed through.

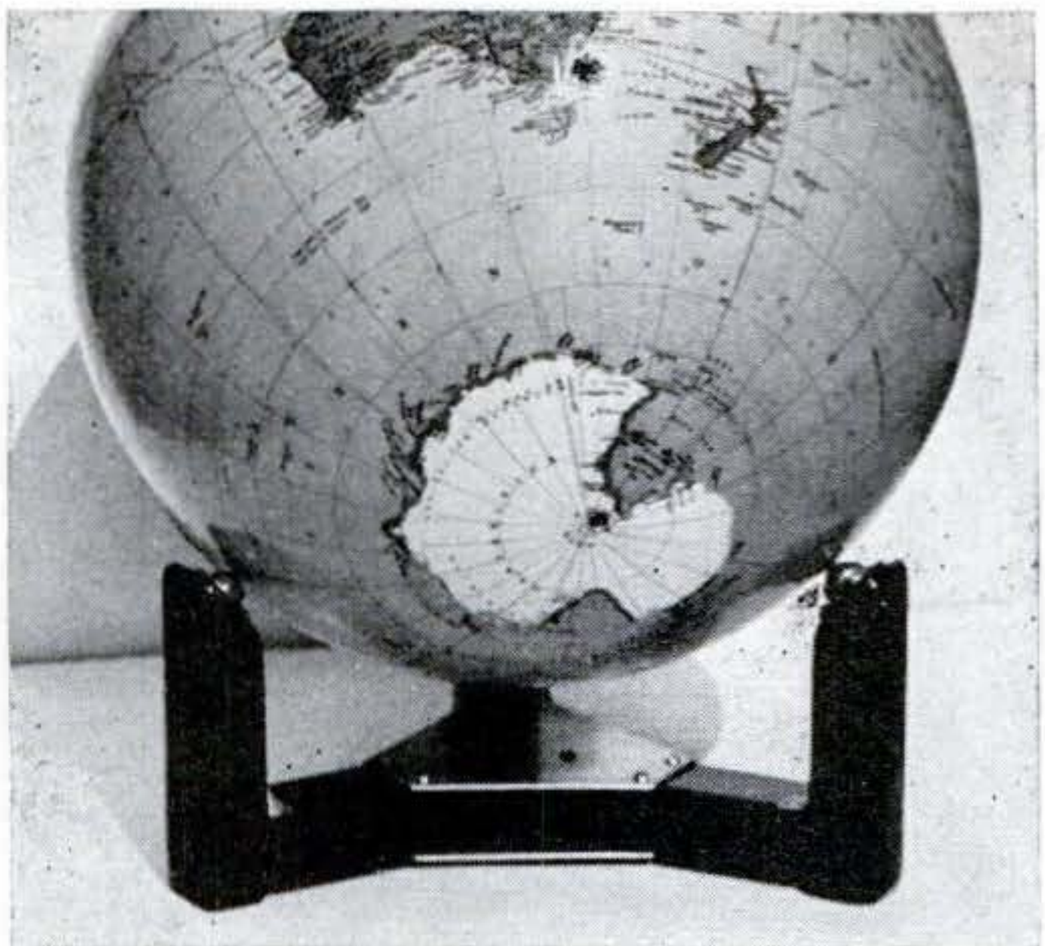
After the metal parts had been given a coat of primer and enamel, I rolled the gadget out and gave my yard a once-over. It made a clean sweep of leaves, twigs and grass. My neighbor came over.

"The thing seems to work," I said. "And it really wasn't hard to build."

"Course not," he answered. "Don't you remember? I told you so. . . ." END

Copyrighted material

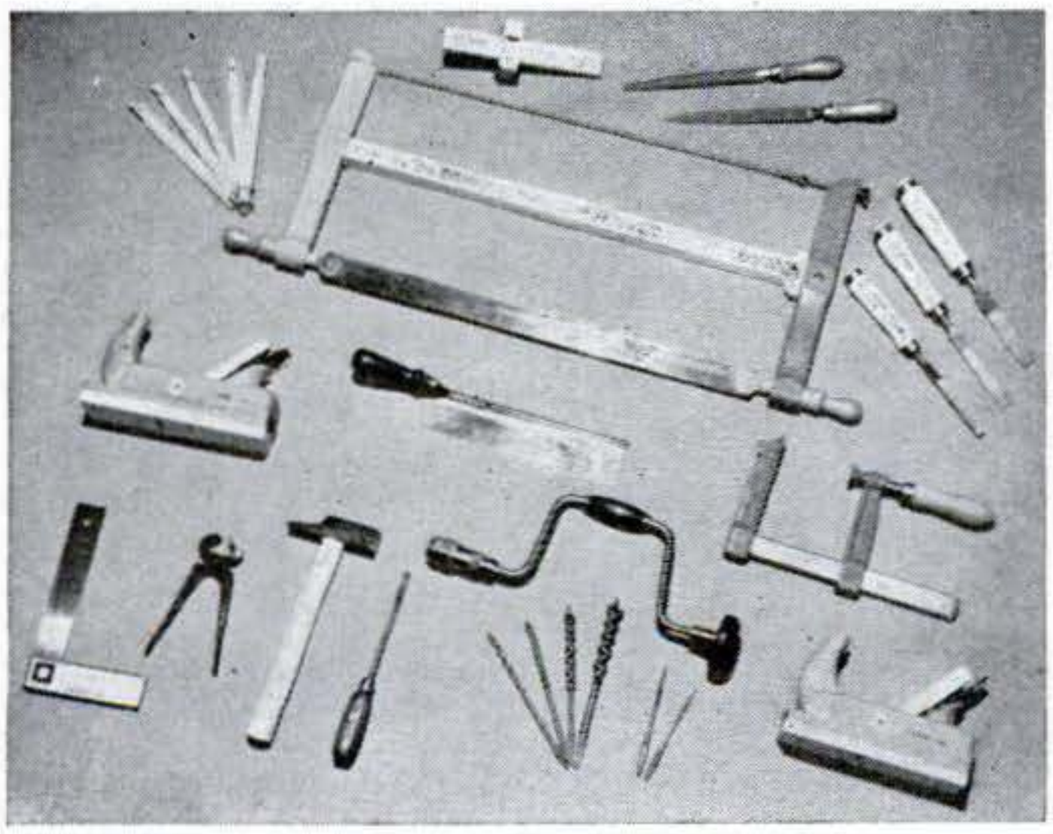
Free-Rolling Stand Holds Globe



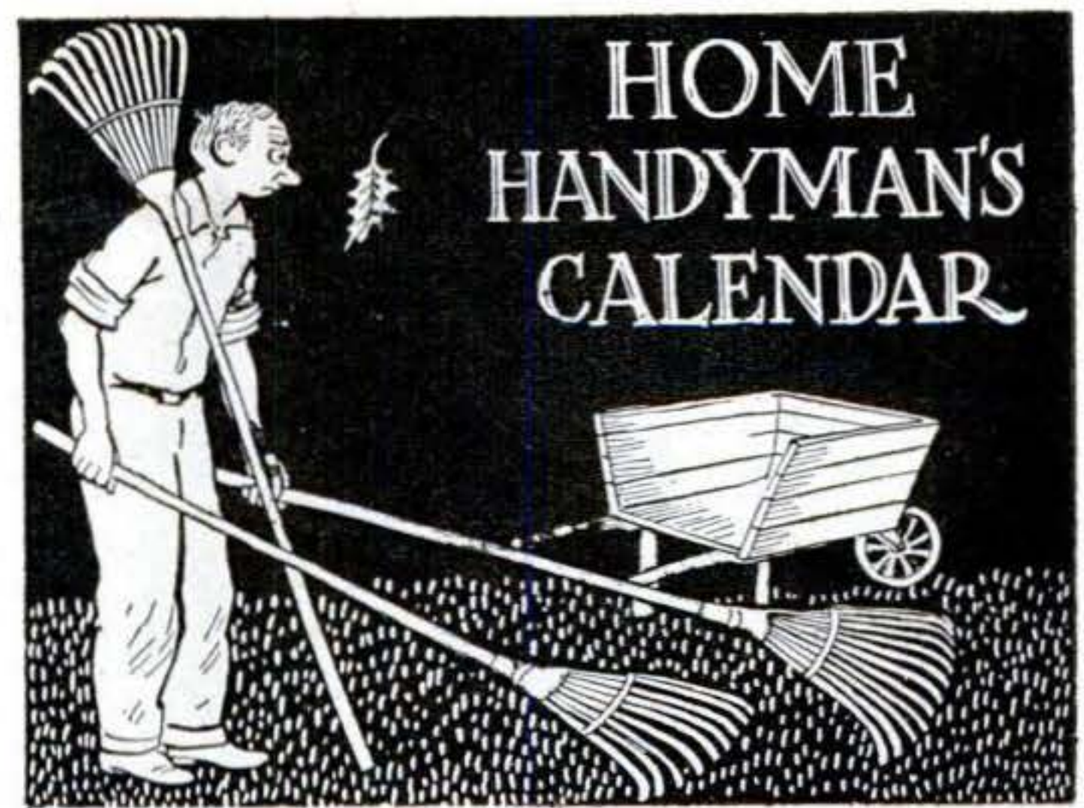
GLOBES mounted on a polar axis are out of date in the air age. A plane flies over the earth's surface on the shortest possible route—often over the poles. Only a free-rolling map can follow its course.

To convert a standard polar-axis-mounted globe to a free roller, remove the spindle rod and mount the globe on a three-point caster base as shown. Use good quality ball casters. Space the arms equal distances from the center and slope the top of each support arm inward about 45°.—*D. M. Desoutter, London, Eng.*

Tools for German Apprentice



THESE are the tools a German youth must own before he can sign on as a carpenter's apprentice. Because some youngsters have no money to buy the tools, CARE (20 Broad St., New York) has arranged to deliver the kit to any point in Berlin or West Germany that an American donor may specify. Made by a German firm, the tools cost donors $20 per kit.

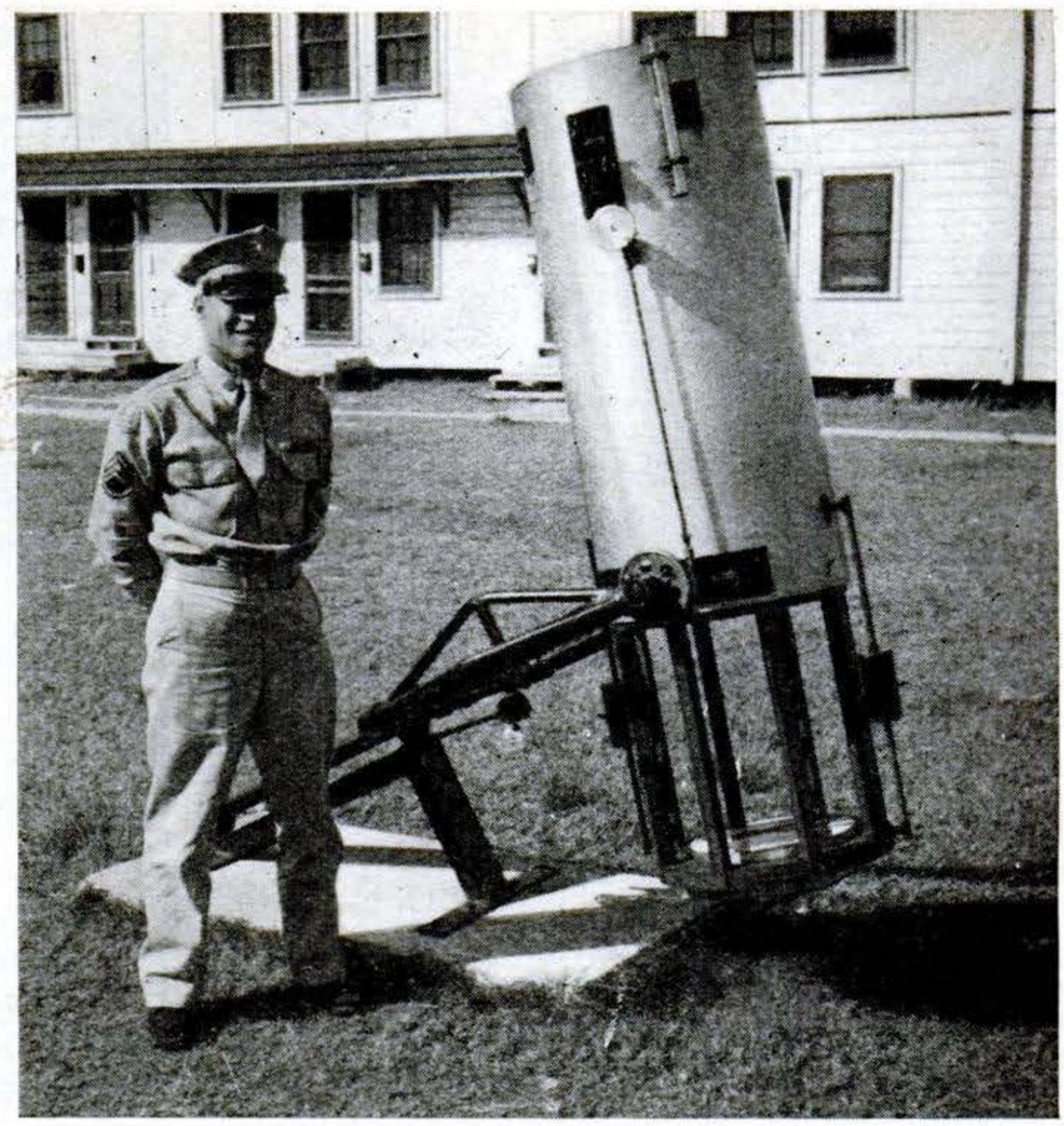


September means the end of summer and the beginning of falling leaves. Get your leaf cart and rakes in shape before leaves turn brown and shower down with the first frost. Or better yet, build the sweeper described on page 193. If you haven't tended to it yet, put in a supply of fuel. Finish outdoor masonry jobs. Drain outside water lines and store hose on reels in the basement. Repair and clean roller shades and Venetian blinds.

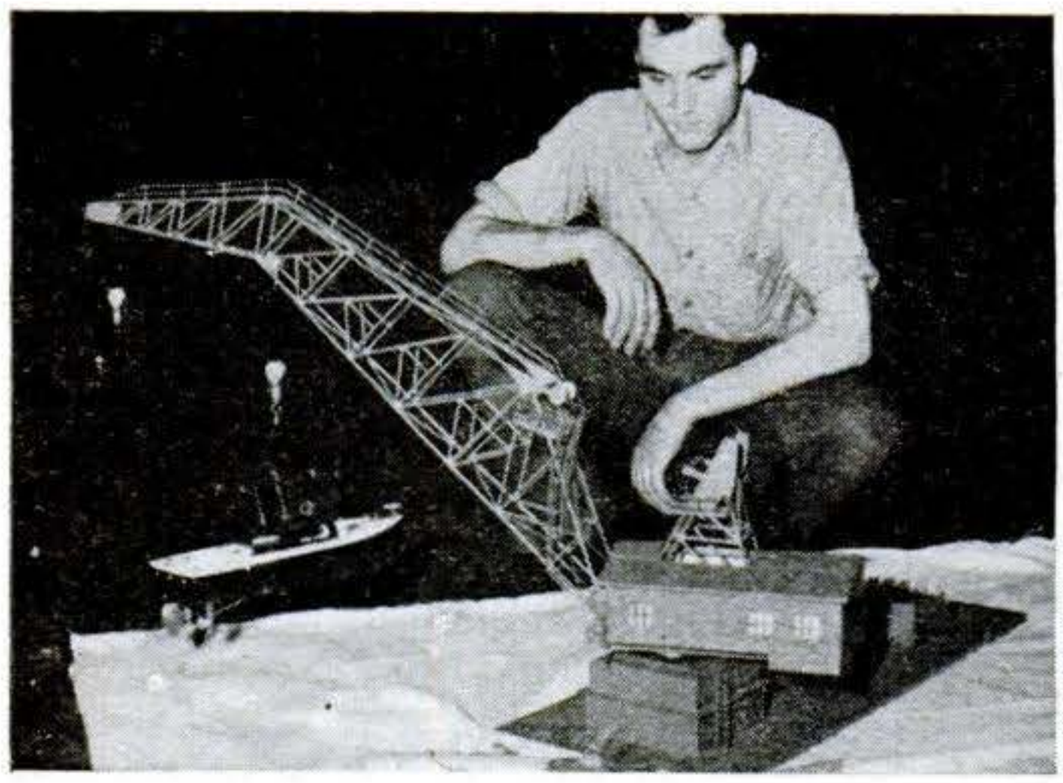
- Remove awnings, make any needed repairs and store them for the winter. Prune trees and seed the lawn. Oil and store electric fans. Close windows and vents in attic and basement. Paint and repair storm sash. Check your heating plant yourself, or else have a serviceman make sure the plant is in top shape for winter's first cold day. Are your grounds and fences in condition to take winter's first blast?
- Clean grease trap and septic tank, and make sure the field drains are functioning properly. Inspect and clean, if necessary, all plumbing traps and drains. Clean and grease the lawnmower and store it for the winter.

Copyrighted material

Craftsmen in Uniform



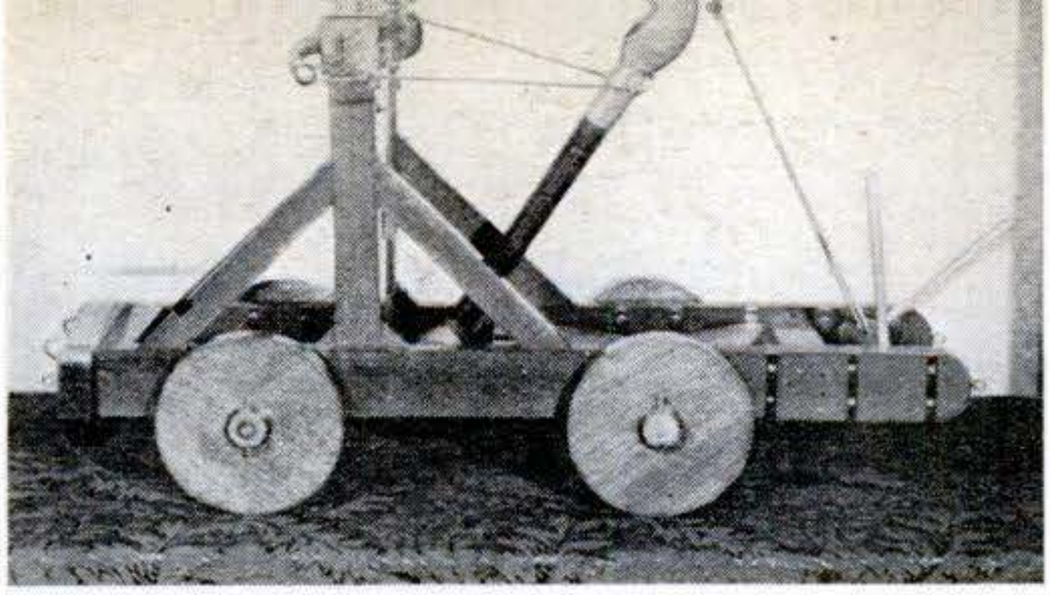
One of 57 Inventions. The Newtonian-type reflecting telescope beside Air Force T/Sgt. Donald A. Vorhies (right) is his own handiwork. He ground the 15″ mirror as well as the other optical parts. The telescope can be changed to a more complex type. The Sergeant reports that since 1943 he has made 57 inventions. Among them is a dismounting machine for changing the huge tires of heavy bombers, said to have saved nearly a million dollars a year during the war. It enabled eight men to do the job (40 were needed before) and cut tire damage to one percent of the previous rate. Other devices developed by Sergeant Vorhies, holder of the Legion of Merit for his work, include an emergency escape seat and a tripping device for training-parachute harness. Sergeant Vorhies, now at Kirtland Air Force Base, N. M., says he builds a project first, "designs" it later by having drawings made.



Lifts 50 Tons—in Miniature. James J. Luke, Aviation Structural Mechanic Second Class, began this model crane as a toy for his son. When he finished, 380 work-hours later, it was so complicated that it's all he can do to run it himself. A copy of a 50-ton Navy dry-dock crane, it has five electric motors, 13 switches, four-step voltage control. The gears came from eight clocks. Luke made it aboard the USS *Rendova;* he's trying to simplify it for his boy.

Remote-Control Model. You can pilot this 36″ Chris-Craft with a flashlight. A rotating photoelectric tube triggers relays that control electric motors, moving them through the sequence of stop, forward, stop, turn, stop. A single motor with a centerline prop drives the boat forward. Two other motors drive outside props of opposite pitch to turn it. The model was built by Army M/Sgt. Kenneth J. Stohlmeyer of the ROTC unit, University of Detroit.

Copyrighted material



Ballista Ballistics. This handsome model shows a medieval siege gun—the rock-hurling ballista. The throwing arm, cradling a missile, is winched down flat against the tension of the horizontal bow. Released, the arm snaps upright and heaves the rock. M/Sgt. Norman C. Krischke of the Air Force took about 300 hours to build the catapult, using a picture as a guide. The materials, which cost $5, include nine kinds of wood, plus brass, lead and leather.

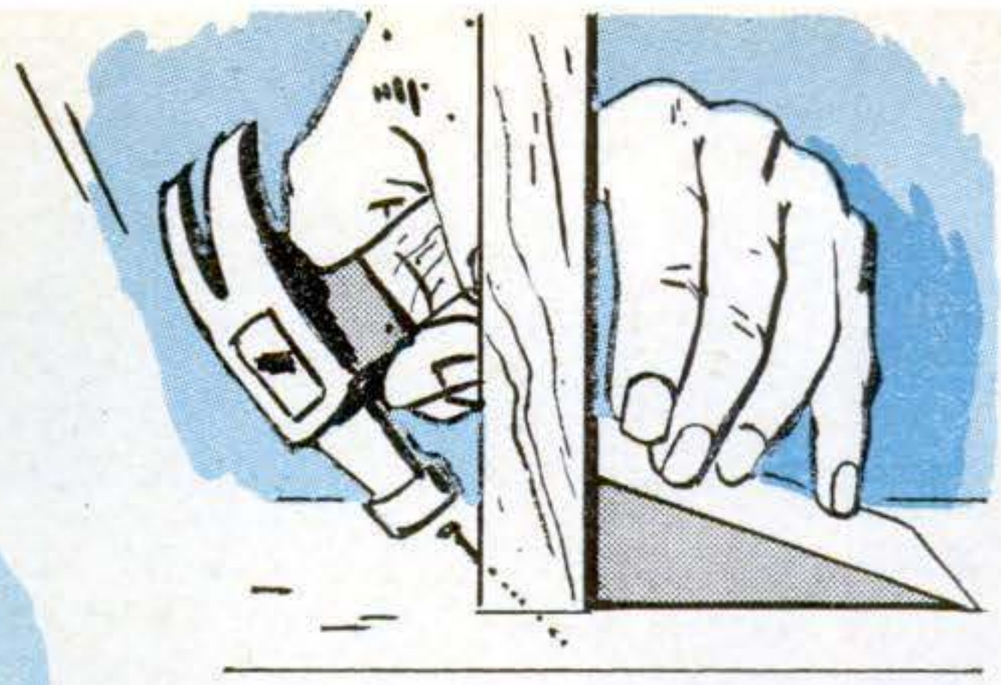
Customized Scooter. The snappy little runabout above started out as a three-wheel Cushman scooter. Cdr. O. B. Stanley Jr., Naval Auxiliary Air Station, Kingsville, Tex., added body and seats, moving the controls forward. The body is partly new black iron, partly pieces from junked autos. The car has two forward speeds and reverse, cruises at 35 m.p.h. with a 40 top, makes 41 miles to the gallon. It seats two adults—or Commander Stanley and his four kids.

"It Won't Work." That's what the Seabee builders named this vehicle when they set out to make it. They put in 300 man-hours of the spare time that hung heavy on their hands at the Naval Arctic Test Station at Point Barrow, northernmost point of Alaska. Now their power ski-sled makes 45 m.p.h. over snow and ice—and they don't dare let it all out on the rough Arctic terrain. It is powered by a salvaged 95-hp. Mercury engine, rear-mounted beneath the shaft of a second-hand propeller. The transmission uses two jeep differentials and a universal. The chassis is reworked from an old portable welder. The body is ¼" plywood with ½" angle-iron framing. There's no radiator fan—the prop draws air in through the engine housing. Driver First Class M. E. Wood, (right above) designed and built the sled with the help of Driver First Class G. L. Montgomery (left) and Driver Third Class W. J. Gallaher (center).

Copyrighted material

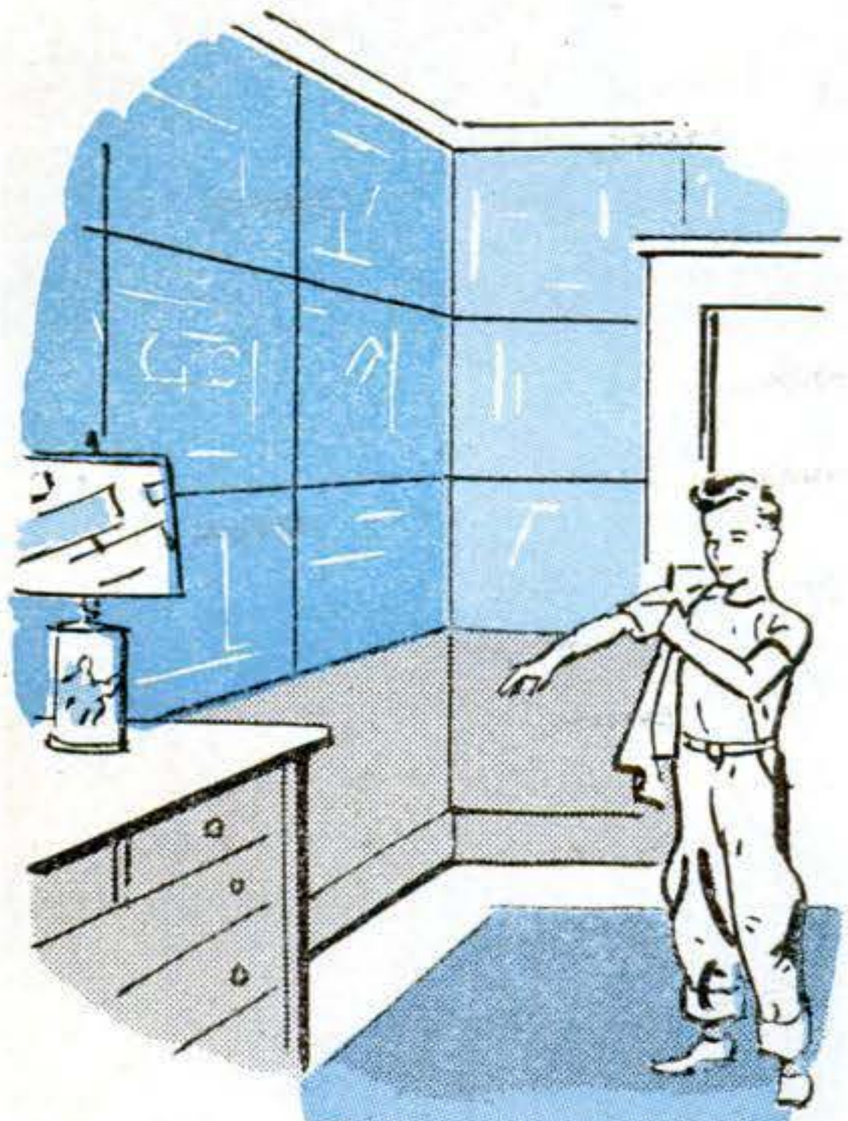
Keeping the Home Shipshape

A tote tray made from bread tins will hold all your small tools as you make repairs around the house. It's handy for a housewife, too, for carting cleaning supplies from room to room.

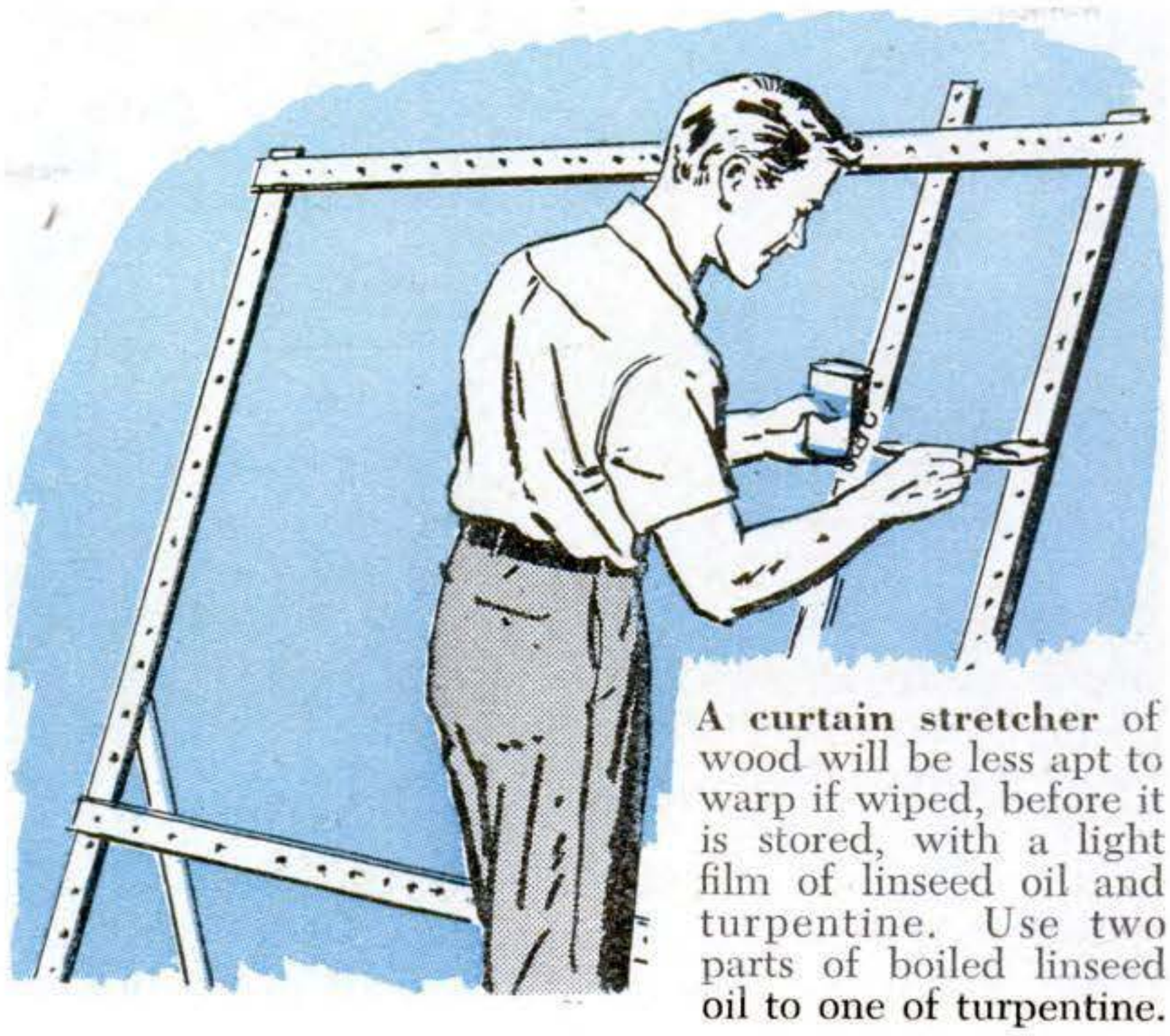


When toenailing light pieces of wood, a rubber door wedge helps. It holds the wood squarely in place, and the rubber won't slip.

When the cover won't budge on a screw-cap jar, try holding an eraser between your fingers and the threaded rim of the lid. It will give you a better grip.

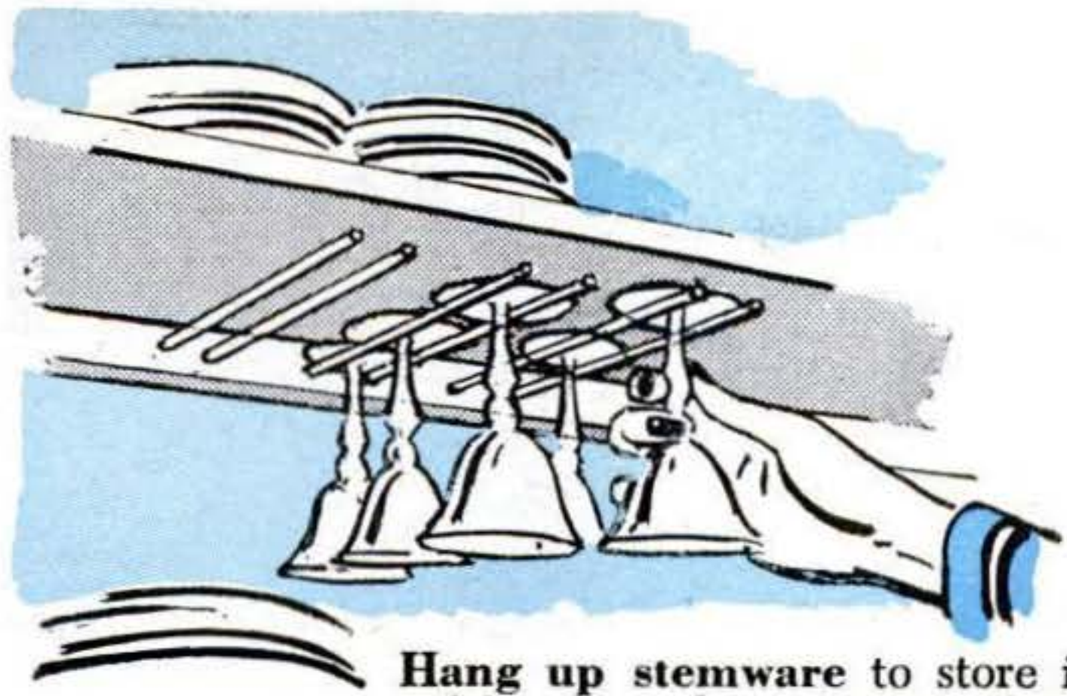


Blueprints are an eye-catching wall covering for part of a boy's room or a basement room. Apply the prints to the wall with wallpaper paste.



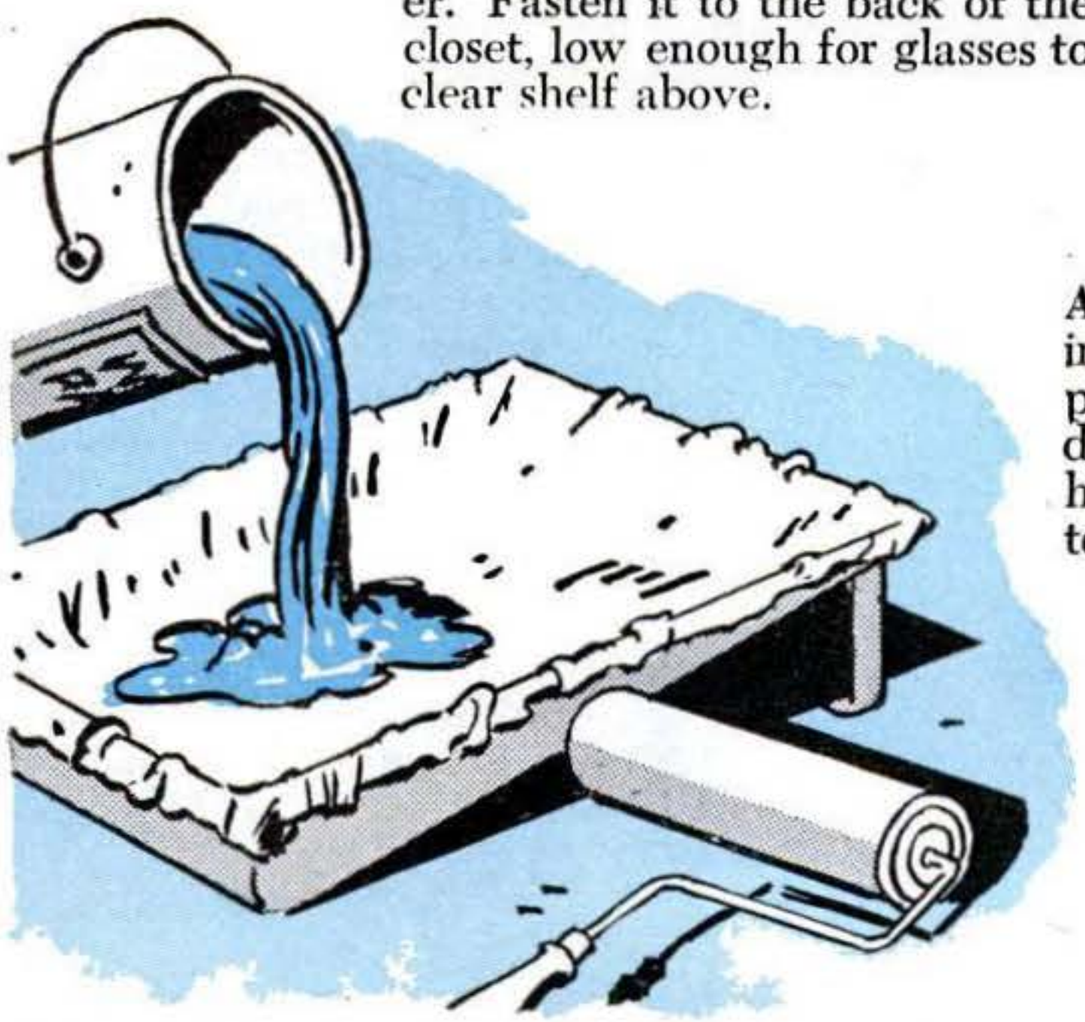
A curtain stretcher of wood will be less apt to warp if wiped, before it is stored, with a light film of linseed oil and turpentine. Use two parts of boiled linseed oil to one of turpentine.

Copyrighted material

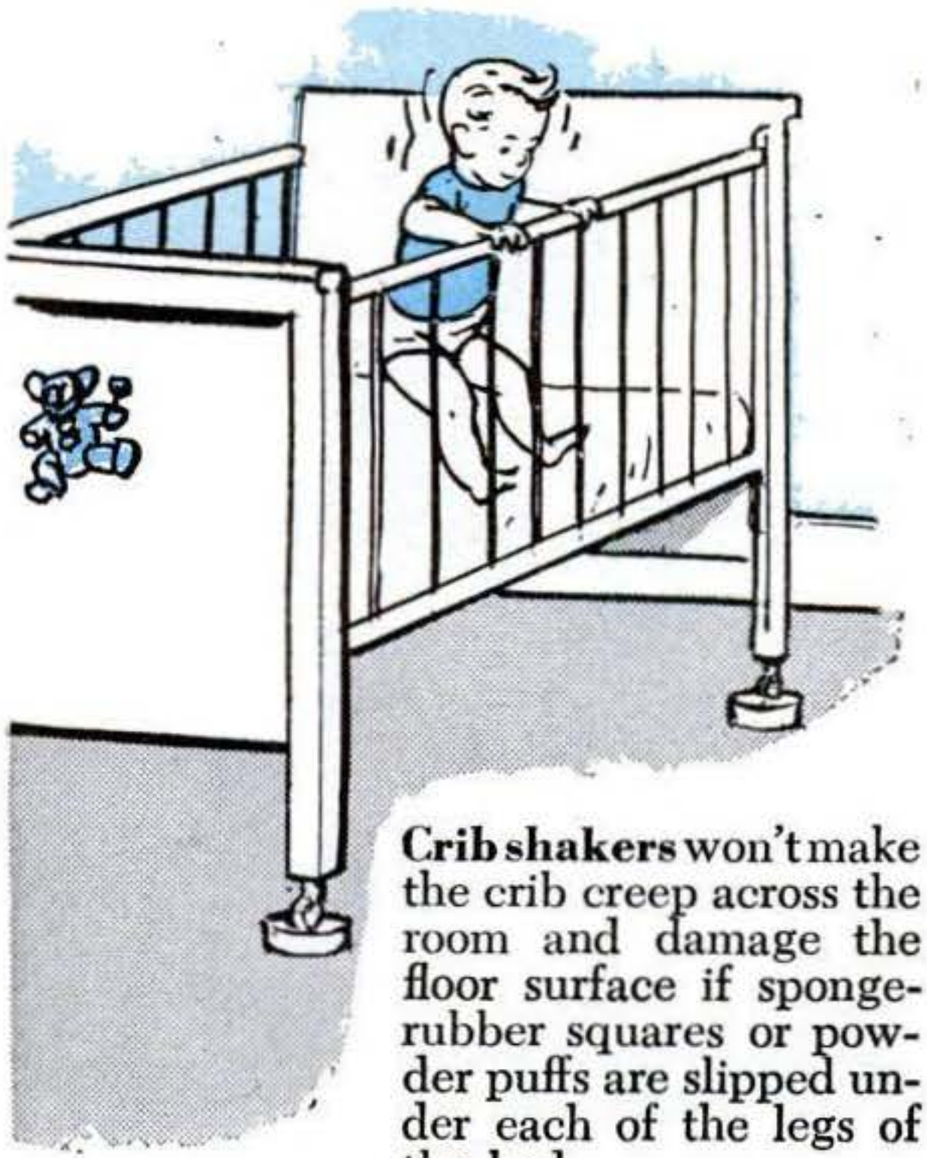


Hang up stemware to store it safely. Dowels set in pairs in a strip of wood make a neat holder. Fasten it to the back of the closet, low enough for glasses to clear shelf above.

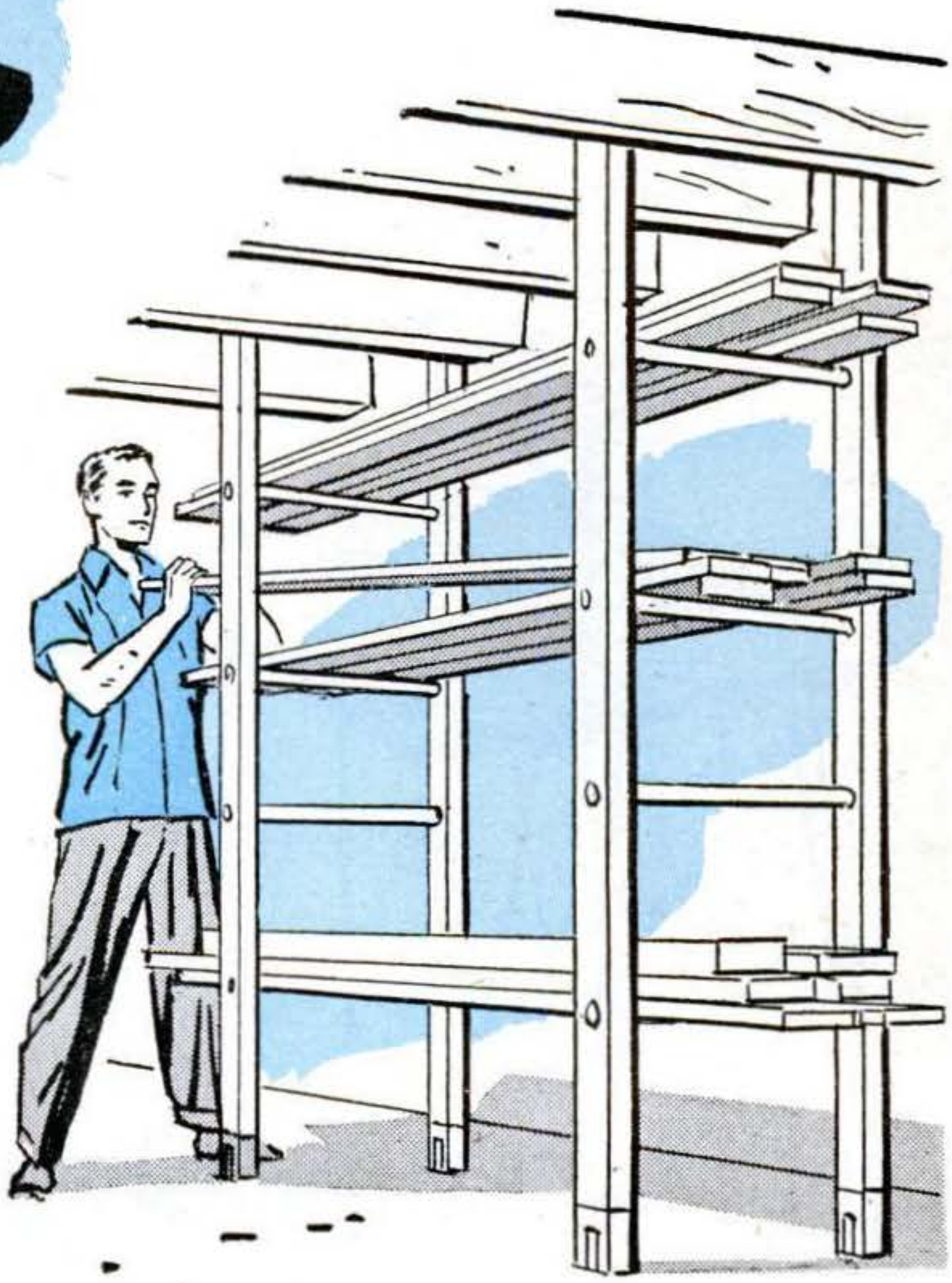
A rubber bumper will soften the impact if the washing machine is pushed too hard against the laundry tub. A slit length of garden hose makes a padding thick enough to protect the washer's enamel.



There's less cleaning up after roller painting if the tray is lined with metal foil. Fold the liner tightly into corners and over edges. When painting job is done, just roll up foil and discard.

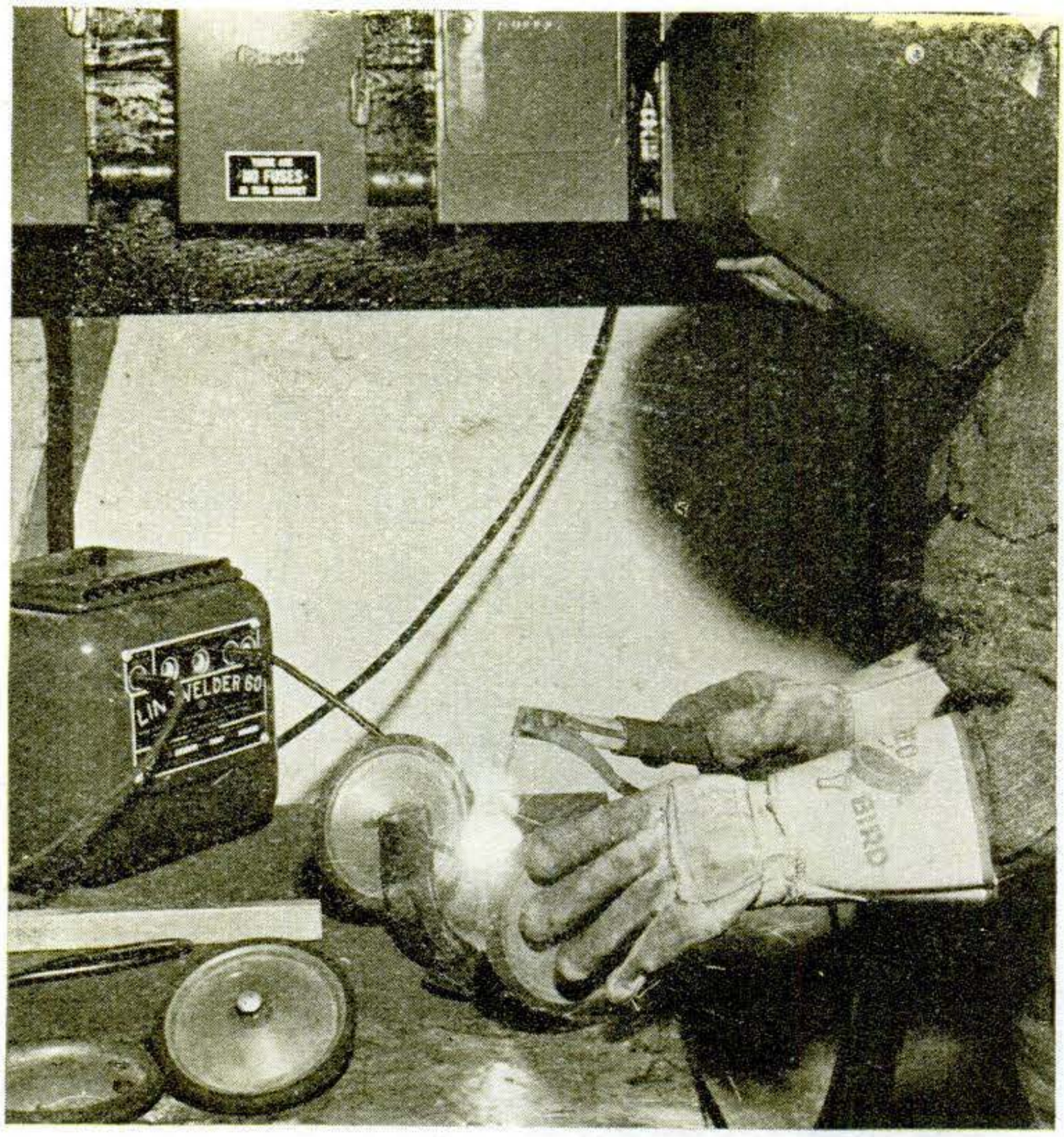


Crib shakers won't make the crib creep across the room and damage the floor surface if sponge-rubber squares or powder puffs are slipped under each of the legs of the bed.



Need storage racks for lumber? If you have a couple of sections of ladder that you never use, you have all the framework you need. Just secure them to the cellar ceiling joists as shown.

Copyrighted material

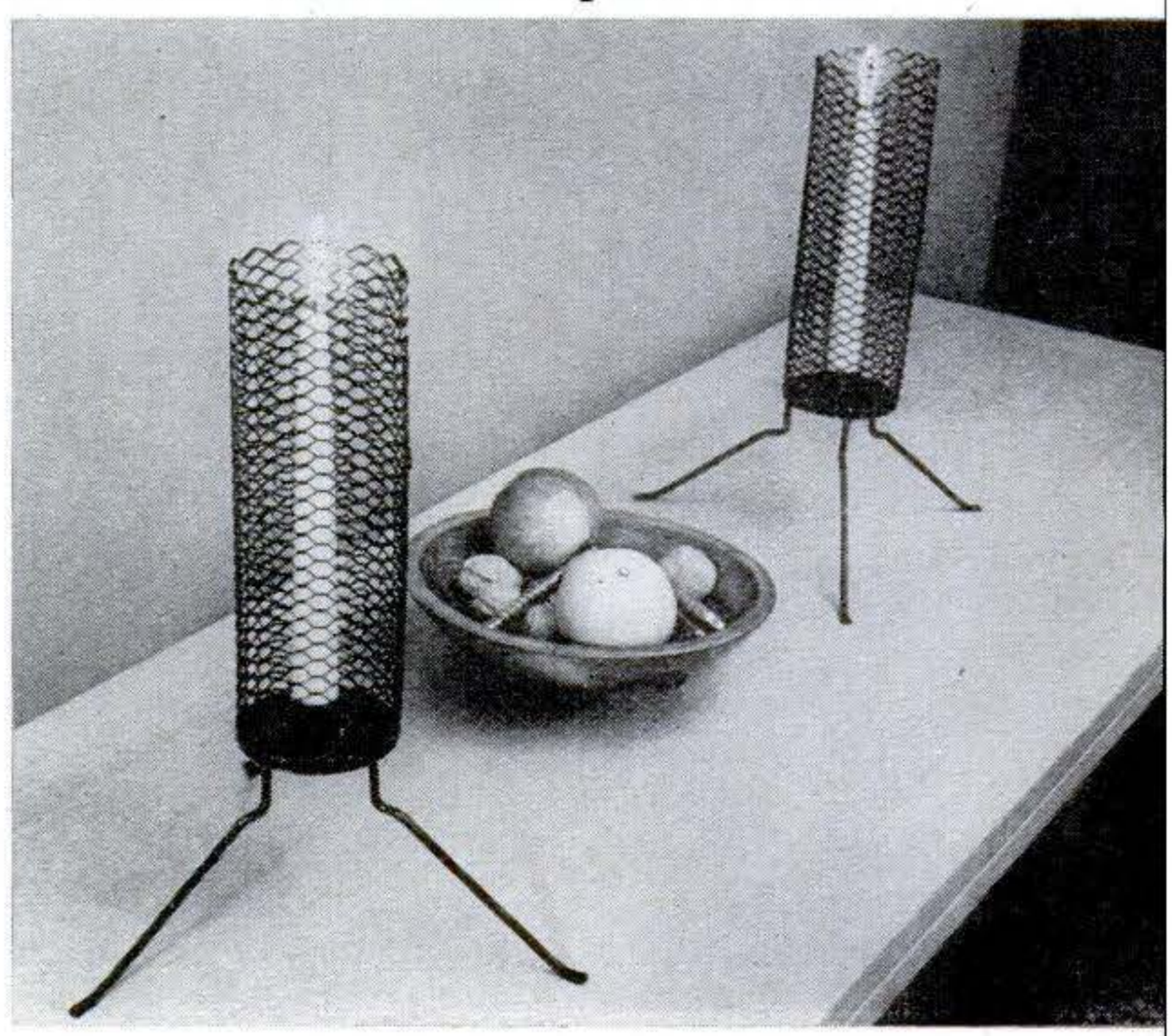


How I

SMALL HOME WELDER can be plugged into any 20-ampere, 115-volt appliance line. It has four current taps, plus low-voltage circuits for electrical testing, battery charging, and soldering. Either 1/16″ or 5/64″ welding rods can be used, as well as a carbon-arc torch, which gives an intense flame for brazing. The tile table and candlesticks below were made with this welder. Repairing toys and garden tools is one way such a machine helps pay for itself.

COLORFUL TILE TOP finishes off this table. A frame of ½″ by ½″ angle iron was made by notching, bending and welding the joints. Self-bracing "hairpin" legs of ¼″ steel curtain rod were welded across the corners.

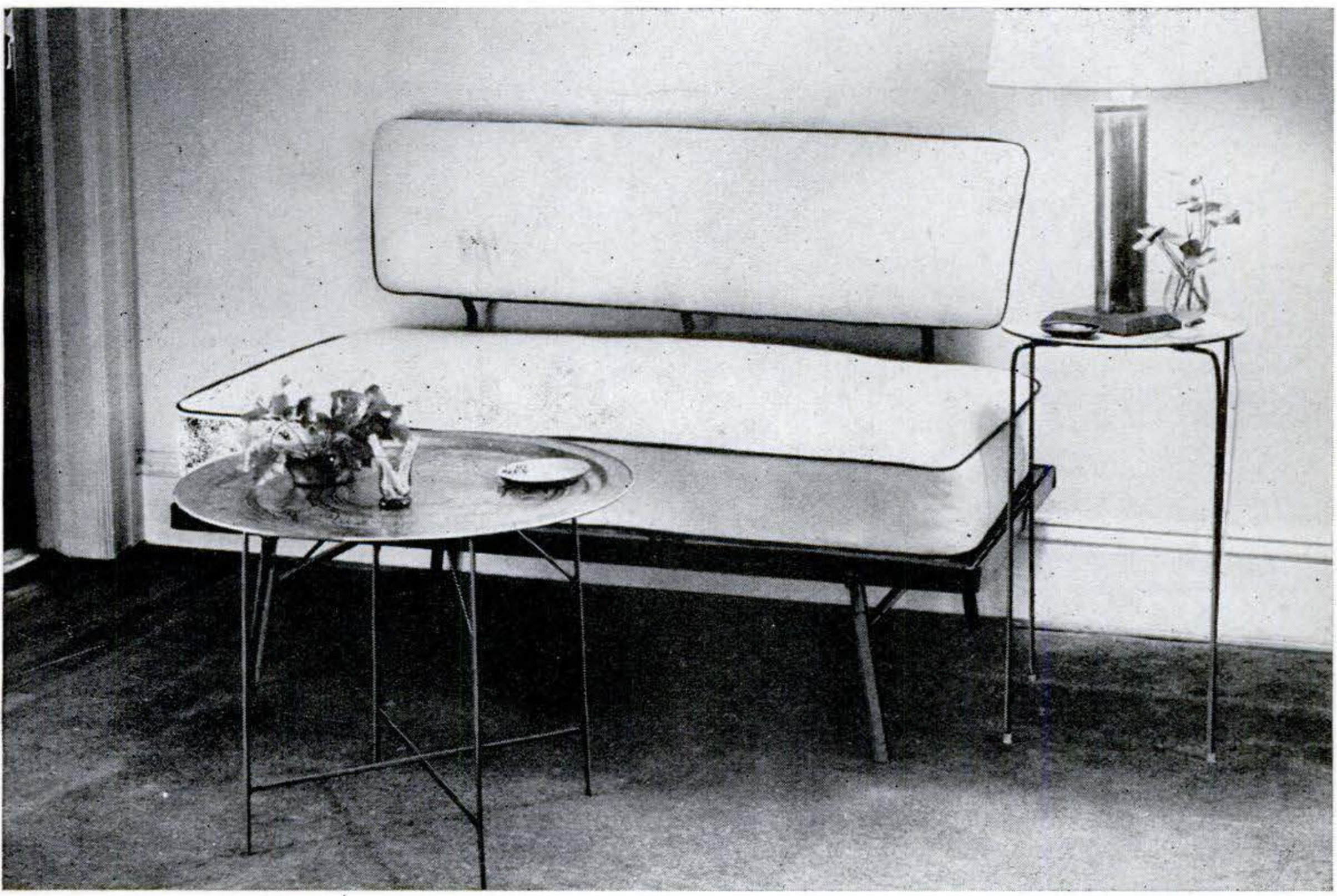
WHO'D GUESS these airy modern candle shields are made of metal plaster lath? Legs of 3/16″ rod were welded to candle sockets of conduit. Shields rest on paint-can lids.



Copyrighted material

Learned Arc Welding

Metal flows like butter, joints become as strong as steel, when you have made this metalworking technique your own.



MODERN COUCH has a frame of 1½″ angle stock, welded with ⅛″ electrode at 100 amperes from the large welder shown on page 207. Legs and rungs are thin-wall conduit, welded with 1/16″ rod and light current. Spring and mattress are from a child's crib. Backrest, a table leaf upholstered with foam rubber, is mounted on supports of ¾″ angle.

By Harry Walton

ARC welding, like cutting glass, is 90 percent self confidence and 10 percent skill. The first time I tried to weld, I decided it just wasn't in my line. Practice changed my mind, and now I'm pretty cocky about it.

Almost before my wife can decide she wants a new tile-top table, I'm hacksawing stock for it. Welding makes most jobs so much easier that I can finish them while they're still fun—a far cry from building things with fussily fitted joints and bolts or rivets. Hacksaw, bend and weld is the schedule for even swanky projects, like some of the furniture on these pages.

It's cash in your hand. Knowing how to weld pays off. Even after deducting the cost of my outfit from the value of things I've built and salvaged, I come out ahead.

The kids' slide in our back yard was welded from eight bucks' worth of conduit and sheet metal. Broken wagons, tricycles and other expensive toys have been repair-welded as good as new. A king-sized outdoor fireplace grill was welded up of steel rod. Garden tools have to wear out; break-

Copyrighted material

PLANT STAND has supports bent from 5/16″ square iron and shelf frame of ½″ by ½″ angle. Welding was done with 3/32″ rod at 70 amperes. If welder hasn't enough capacity to weld this thickness, parts could be brazed with a carbon-arc torch. Shelf is expanded-metal mesh, held in with tack welds.

TRAY LIFTS OFF for bringing in refreshments or taking dishes back to the kitchen. Frame was made of ½″ by ½″ angle to fit the tray, with legs of same stock welded on.

EMBOSSED BRASS TRAY, formerly a wall decoration, was made into a handsome coffee table by welding a stand of ¼″ curtain rod.

ing will get them nowhere. I just weld them.

Indoors we have some of that wrought-iron furniture you can blow a bankroll on. But ours came out of my basement shop, and cost me only the price of the angle iron.

If I had the time, I could do a cash business in small welding jobs for the neighborhood. There are plenty of them.

Buying a welder. Farmers got wise to this welding dodge a long time ago. Like most home mechanics, I thought it was strictly for tractor hitches and other husky jobs and that the equipment was too expensive for me.

But small transformer welders start down around 40 bucks, and can be plugged into any 20-amp. (12-gauge wire) appliance line. A transformer welder has two separate windings. Line juice goes into one, and you take welding current from the other, at a lower voltage but a higher amperage. For instance, the welder I started with (shown on the first page) gives me over 50 amperes to weld with, but won't blow a 20-amp. fuse.

With a transformer welder, you are insulated from the 115-volt line. The electrode voltage is never over 65 volts, so the shock hazard isn't very great.

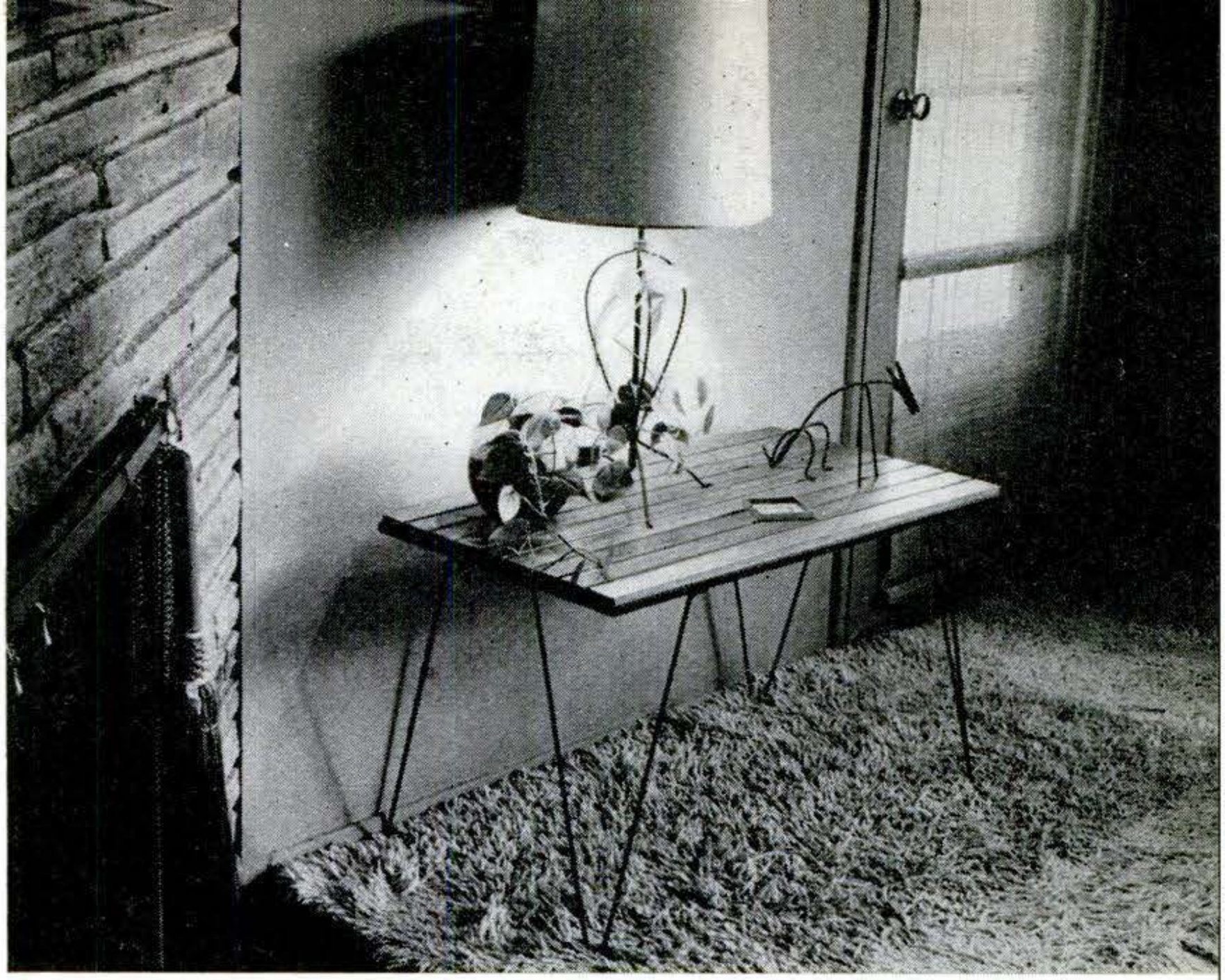
My own transformer rig cost me less than $50 with a helmet and a supply of rods. Another ten-spot went for a carbon-arc torch, a pair of leather gauntlets and a piece of ⅛″ steel plate to weld on.

Of course there is a limit to what 50 amperes will weld. It won't build farm machinery or patch a cracked cylinder block. Sheet or strap iron ⅛″ thick and rod 5/16″ in diameter are about the top limit. But that's enough for most jobs around the house, and I can use the arc torch to braze heavier stuff. The iron railing on our front step was built that way.

Striking an arc. I set up the frame from an old washing machine alongside the furnace, where there is nothing that sparks could set on fire, and laid the steel plate on it. I put the ground clamp on a clean corner of the plate, plugged the electrode cable into the lowest "heat," or current tap, and clamped a 1/16″ rod in the holder.

When I swung the helmet down, all the lights went out. I jabbed blindly toward a piece of 1/16″ sheet I had laid on the table. Things started off in a shower of sparks that made me jerk the electrode back. This comes naturally, but it won't do any welding.

Copyrighted material



NOTCH A LENGTH of small angle as in the drawing below. Bend and weld to form corners, weld on legs bent from ¼″ rod, and set in a top of wood slats. Result is a slick modern occasional table like this one. Angle can be bought at farm-supply and welding shops, rod at big hardware stores. Lamp is a piece of ⅛″ pipe with shaped 3/16″ rod welded on. Clothespin head of wire dog holds mail.

I jabbed again. There was one fat spark, the transformer hummed loudly, and the rod was "frozen"—welded to the sheet. When I yanked up on the rod, the sheet came with it. Sparks flew from every corner as it dangled on the table.

With a flying fumble, I turned the welder off. After breaking the rod free, I took a deep breath and tried again, first clamping down the practice sheet. This not only gives a better ground, making it easier to strike the arc, but it lets you break a frozen electrode free readily. If it won't break free, you simply release it from the holder.

This time, when the rod froze, I raised the mask to see better for opening the holder clamp—and looked a juicy arc right in the eye as the rod came out. Rule one: never raise the mask to free an electrode.

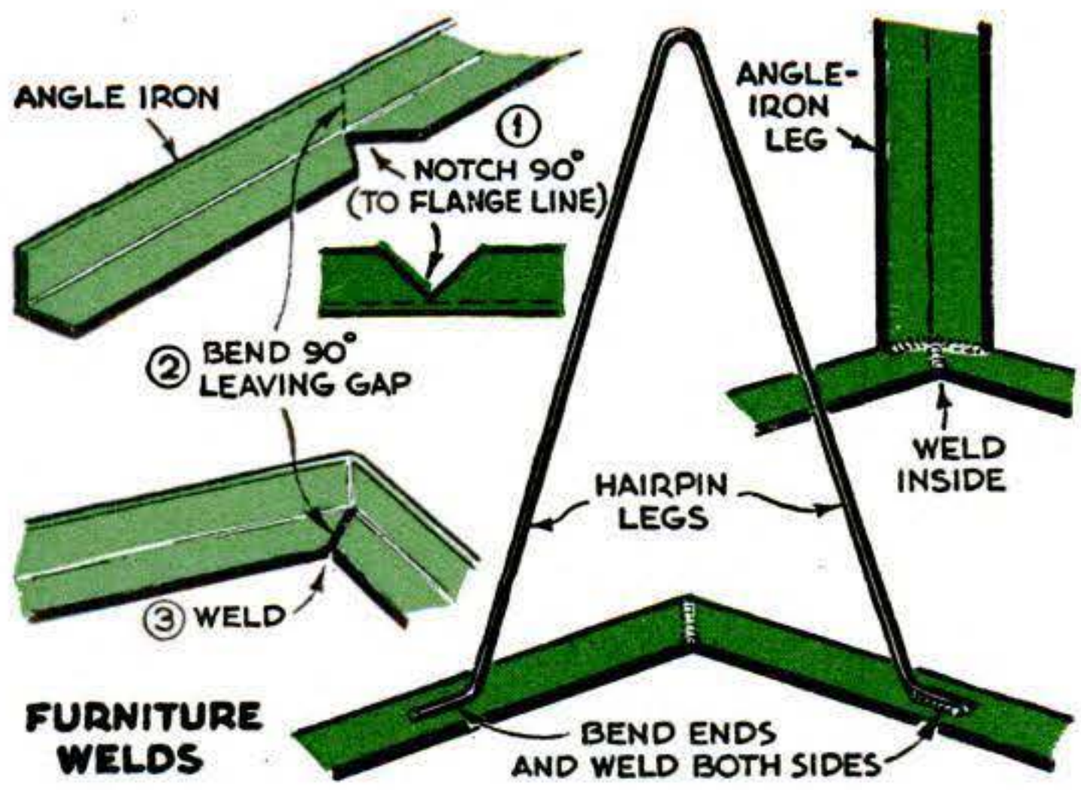
Arc flash isn't dangerous, but it won't help you enjoy life. Always wear a proper arc-welding mask—not gas welder's goggles or sunglasses. Veto anybody else's watching you "for just a few seconds" without eye protection, and don't let the family pup into the cellar while you're welding.

It's impossible to see through the helmet until the arc is struck. If you can practice in sunlight (even if it comes through a cellar window) you may find it easier to get started.

About this time I decided to look at the directions. Strike an arc, they said, by scratching the rod on the work like a big match. But pull it off about ⅛″ as soon as the arc forms, because molten metal flows across first, and this is what freezes the electrode. After a second or two, lower the tip of the rod to correct arc length. With my welder this is 1/16″ to ⅛″ (about the same as the rod diameter).

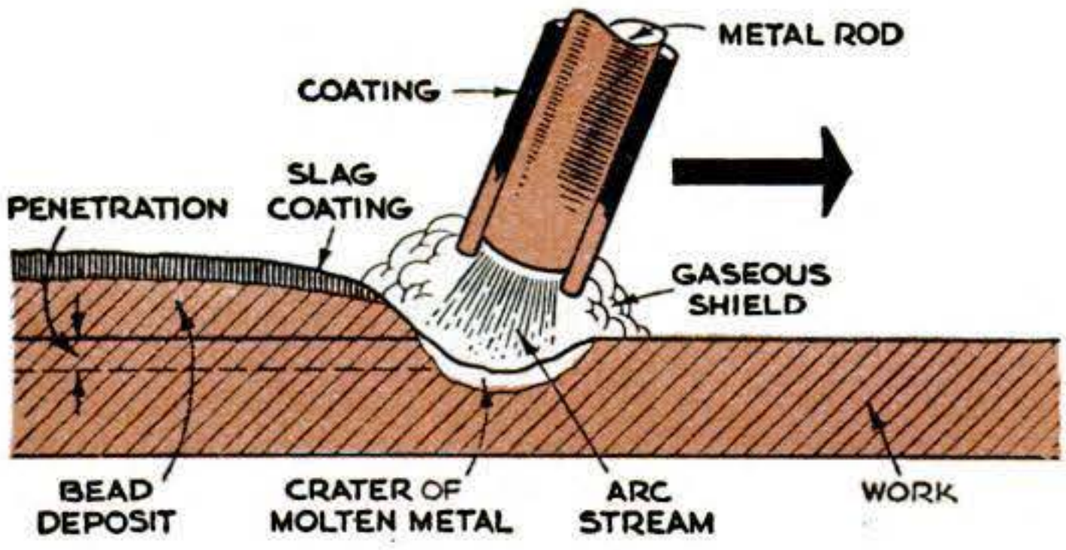
Doggedly determined to weld, I tried again. Sparks flew—and somebody lit a hot foot inside my right shoe. After a short Fred Astaire step, I formulated rule two: make sure your work pants are long enough to cover your shoe tops, or wear high shoes if you have them. Every time I break this rule I wind up with a hot instep, a hard thing to get used to.

Start in high. Up to now I hadn't seen an arc for more than a second or two. So I went all out by shifting to the high current tap (about 55 amperes on that machine). I know now that it's easier to hold



FURNITURE WELDS

Copyrighted material



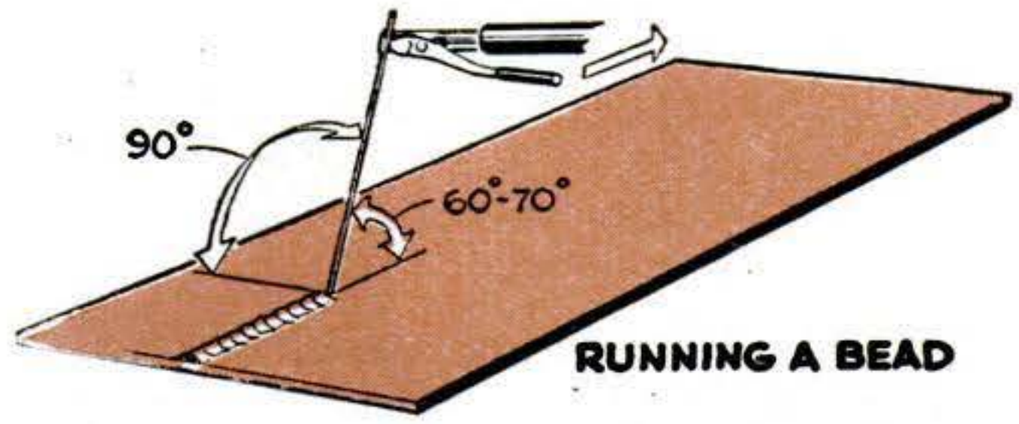
an arc with bigger rod and more current. On big welders, students usually start off with 100 amperes.

Now I could hold the arc long enough to see what goes on. A puddle of molten metal forms under it, and metal from the rod is blown into this by the jet action of the arc. The trick is to melt in metal from the rod well below the surface of the work (that's called penetration). You have to move the rod along just slowly enough to lay down a uniform deposit of weld metal, or bead, while melting the work to receive it. As the rod keeps melting away, you also have to move it down gradually to maintain the correct arc length.

All this with one hand. Don't try to steady the electrode holder with the other hand if you want to learn right.

Speed of travel and arc length are both critical. Too short an arc will tend to freeze the rod. Too long an arc makes an irregular bead, with lots of spatter alongside it and poor penetration. The sound of the arc is a tip-off: a good one has a sputtering, sizzling sound like bacon frying. Too long an arc has more sputter but less sizzle to it.

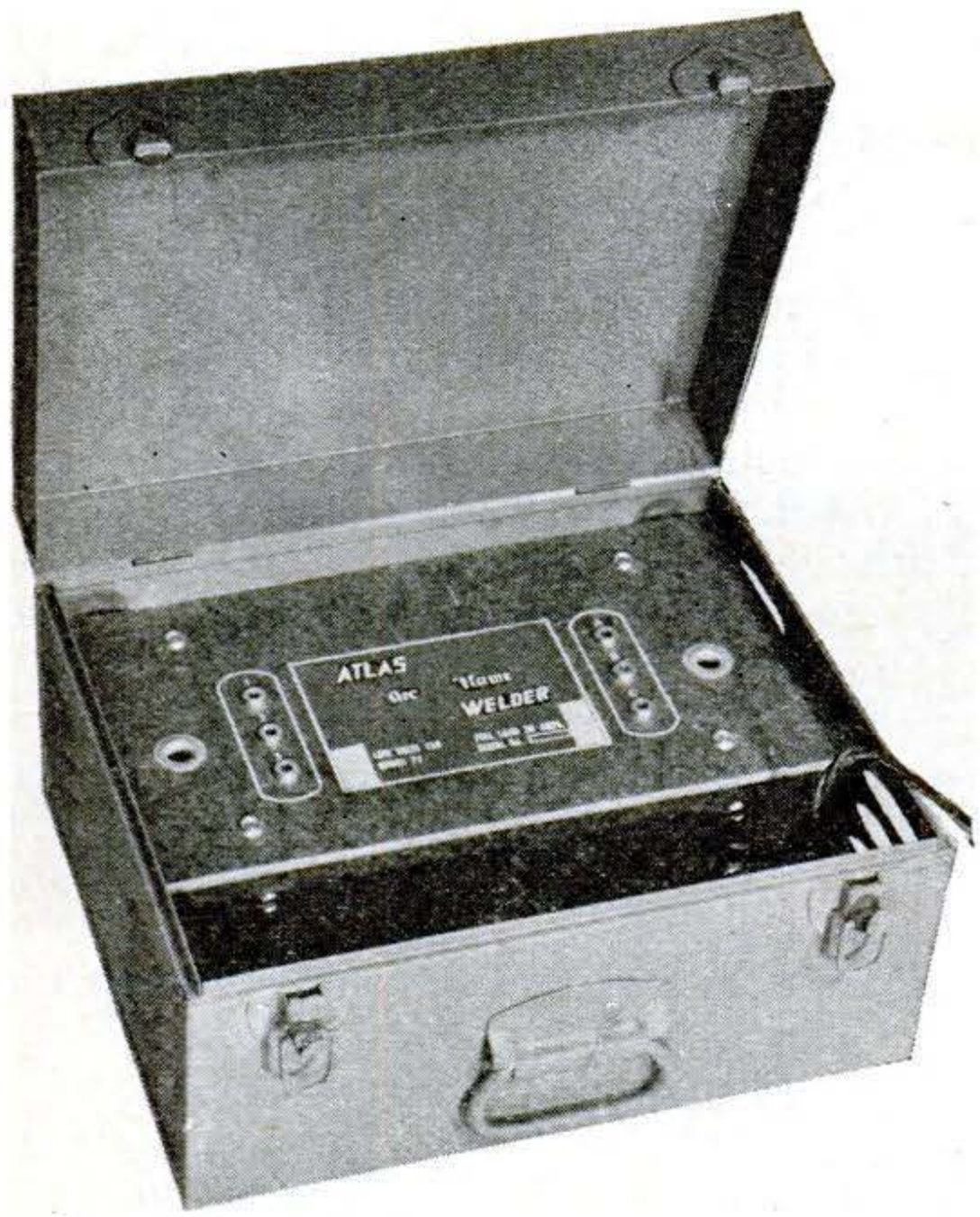
Laying a bead. Running beads on a flat plate is the first thing to practice after you can hold an arc. Keep the rod upright (as seen from the line of travel) but slanted



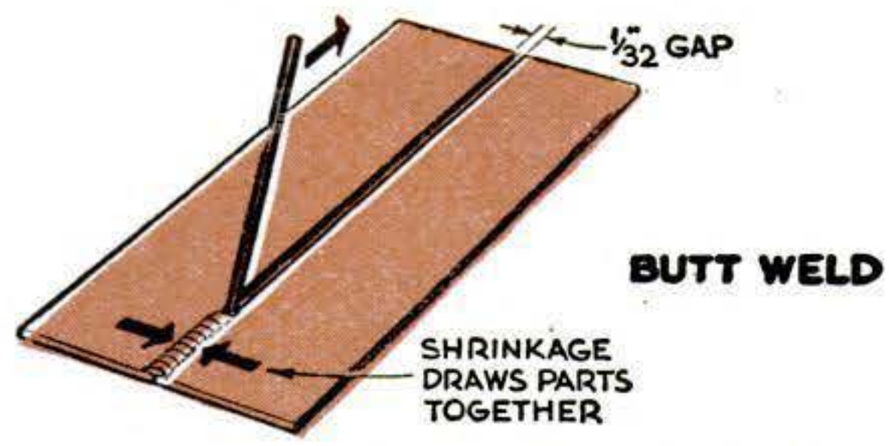
about 25° to the right, the way you're moving it. Move the rod slowly but steadily. A good bead is rounded on top, uniform in width, and blends into the work on both sides. It shouldn't show an overlap of unfused metal along the sides, nor be wide here and thin there.

Mine did, and were: I wasn't holding the arc length steady, and my rate of travel was something like a kid's through a street carnival on his way to the circus. Comparing my beads with the pictures in the instructions, I decided to be nonchalant and light a cigarette.

After a few drags, I switched on the machine and flipped the helmet down. The cigarette bent double and burned my chin. Grabbing for the helmet, I let the electrode drop. Sparks flew from the table, over the mask and past my ear.



ROOM FOR RODS, arc torch and electrode holder is provided in steel case of this 75-amp. model. Made for use on 115 volts, it draws under 30 amperes at full load, can use ⅛" rod and weld ¼" plate in a pinch. Nine welding heats, plus low currents for soldering and silver soldering, are available. It's priced under $50 with helmet and arc torch.



Nursing my chin, I formulated rule three, which has something to do with smoking while you weld.

Beads and butt welds. With the right current for the job, electrode travel should be slow. I found most of my bad beads were

Copyrighted material

made by moving too fast. You should lay ½″ to 1″ of bead for every inch of rod used.

Having run a bead, you shut off the juice and chip off the slag on top of it with a scraper, a sharp-edged hammer or a wire brush. You can't see what the bead is like until the slag is off. It's hot, so brush or chip it *away* from you, and watch your eyes!

When my beads began to look like the pictures, I decided to weld something together. Butt welds looked easy. I clamped two pieces of ⅛″ plate close together with the edges touching, and ran a bead where they met.

After knocking off the slag, I picked the pieces up with pliers, intending to test the joint in a vise. It beat me to the punch by falling apart before it got there. The reason: no penetration.

Anybody who can hold an arc can deposit weld metal, but unless it fuses with the work, it isn't welding. Clamping the edges close together was a mistake. With 55 amperes, butt joints in anything heavier than light sheet metal should be set up with a gap of about 1/32″ between the edges. This lets the arc get into the joint. If leaving a gap is impractical, the two edges should be filed or ground to a bevel, which has the same effect.

A flat butt weld is made just like a bead, but the electrode is tilted a bit more (about 30°) in the direction of travel. A thin line of weld metal appearing on the other side of the joint indicates good penetration. If you want maximum strength, run a second bead on that side.

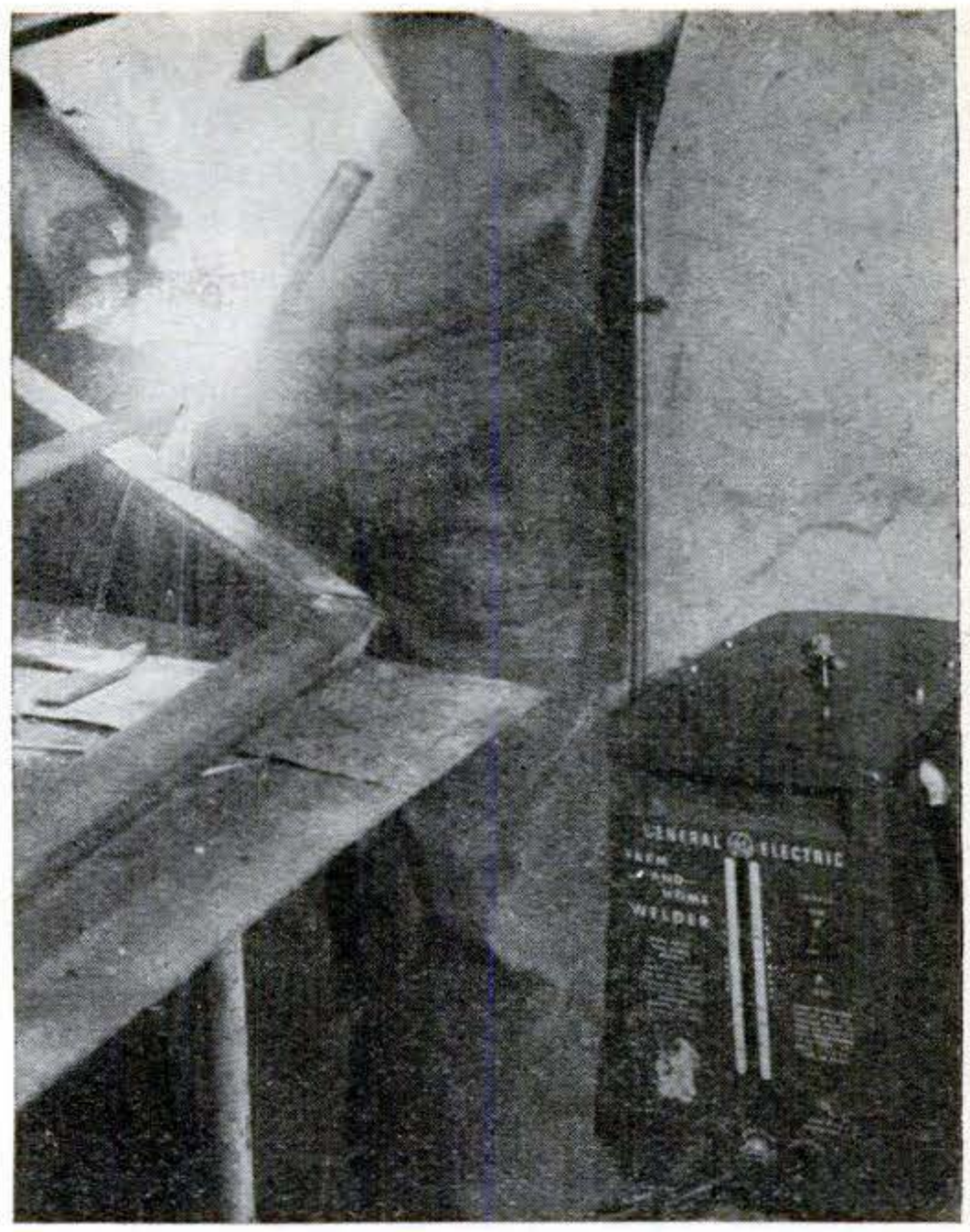
If you measured across a butt joint before welding, you might find it smaller afterward. That's the effect of shrinkage. The weld metal, deposited hot, is sure to shrink on cooling. This tends to draw the parts together across the bead.

Two pieces welded together at right angles will be drawn out of alignment on the side of the bead. One way to neutralize this is to lay a second bead on the other side and let the two fight it out.

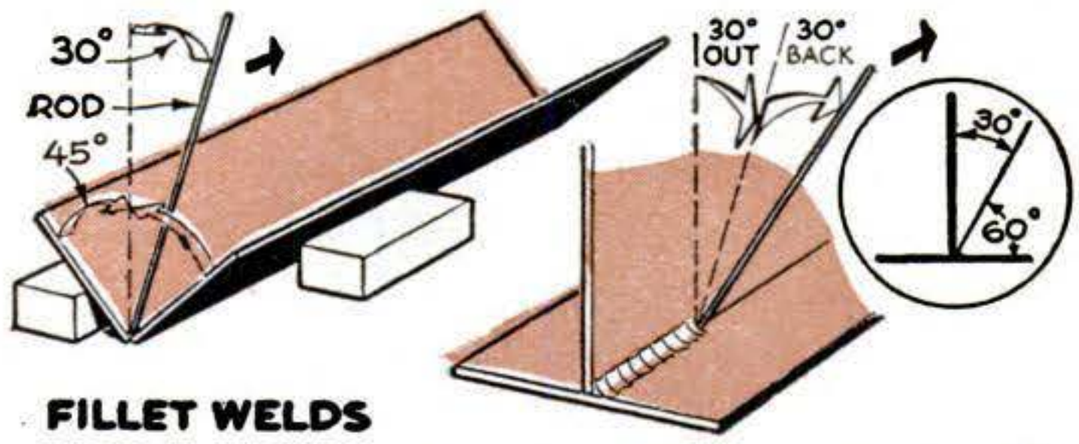
Lap, fillet and corner welds. For a lap weld, point the electrode into the corner at an angle of about 60°. A slow oscillation of the rod across the bead (called weaving) helps get adequate penetration on heavy stock. It's also useful when one piece is much lighter than the other. Time it to dwell on the heavier stock *and to touch the lighter one only an instant at a time.*

An inside weld on two members at right angles to each other is called a fillet weld. If possible block up the two parts to form a V on the table, so that you can lay a flat bead inside the corner. This is easier than welding with one piece flat and the other upright, for which you have to hold the electrode at about 60° to the flat member.

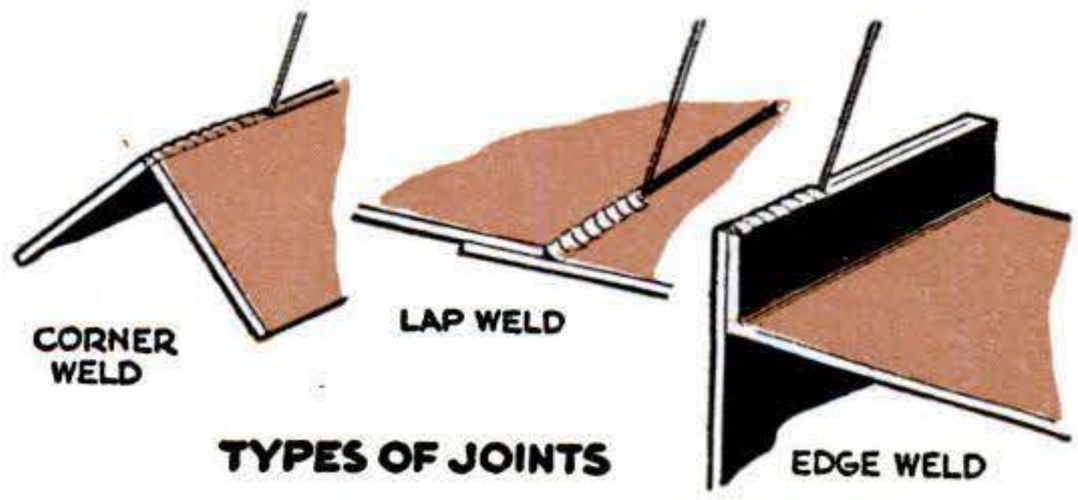
[Continued on page 242]



MAN-SIZED TRANSFORMER WELDER like this 180-amp. unit will handle ½″ plate and similar heavy work. Only half the capacity of this one was needed to weld corner joints in ¼″ by 1½″ by 1½″ angle for the modern couch shown earlier. It has a rotary control on top for varying the current, here adjusted to 35 amps. for using 1/16″ rod to weld conduit rungs to the legs. If you have 230-volt juice, installation of an extra fuse box and new outlet may enable you to use such a machine. With it, you can weld almost any job.



FILLET WELDS



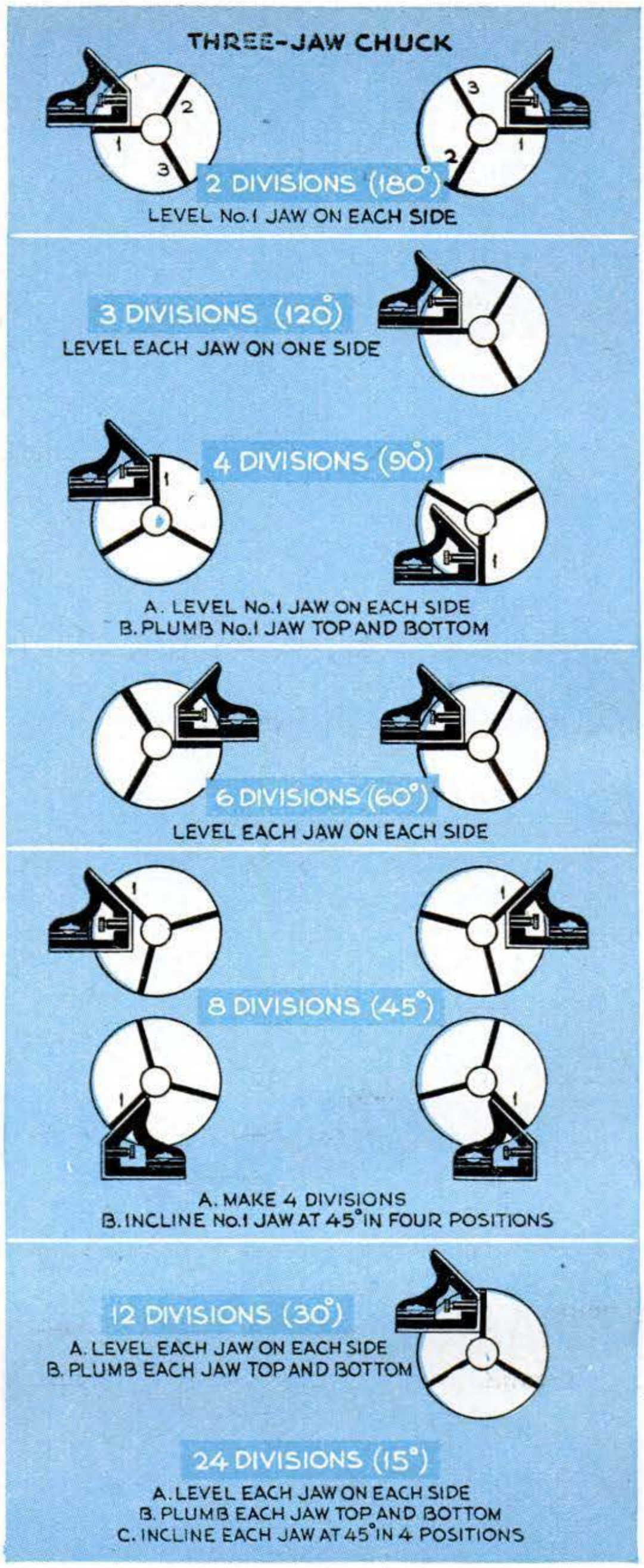
TYPES OF JOINTS

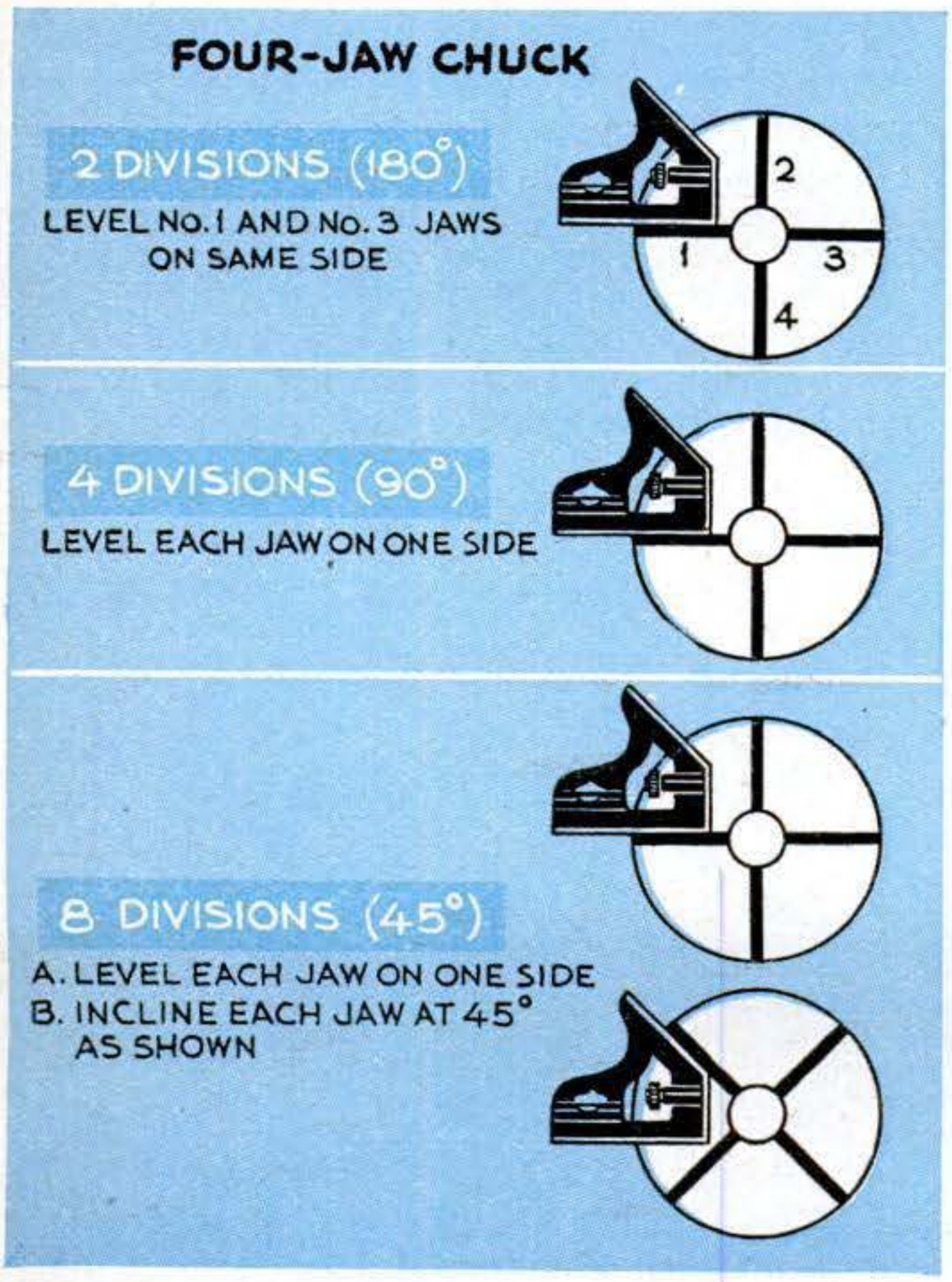
Copyrighted material

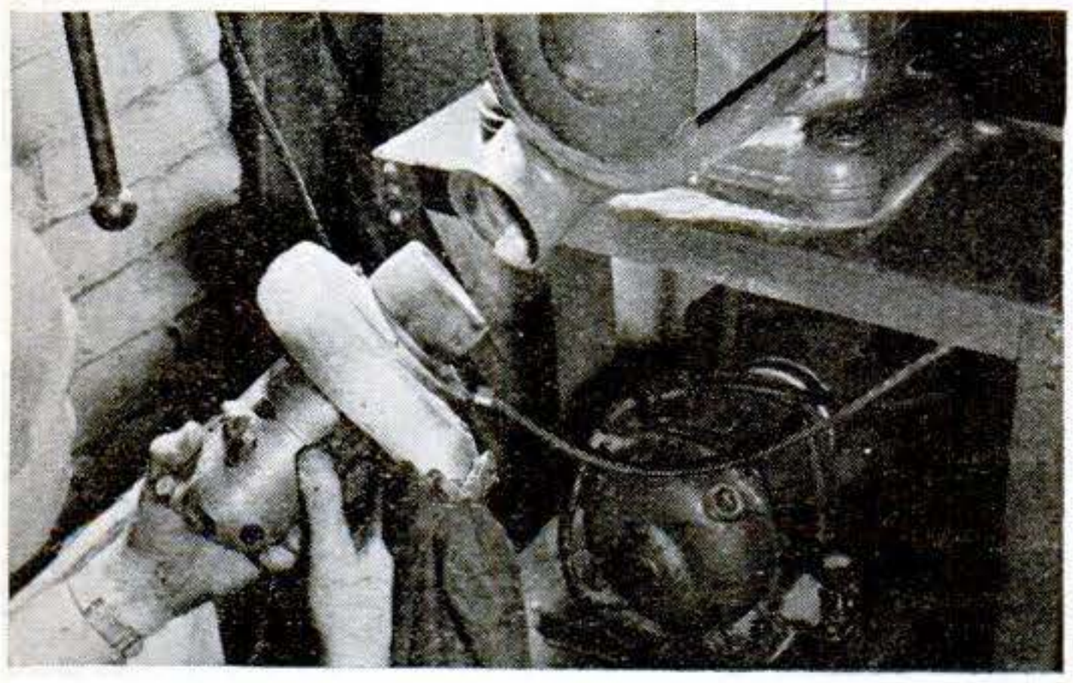
New Shop Ideas

Indexing by Level. If your lathe lacks an indexing rig, this dodge is handy for rough dividing jobs. Use a toolmaker's square with a built-in level and hold it against a chuck jaw, turning the chuck until the bubble is centered precisely. Then scribe the work with a tool mounted at exactly center height. The drawings at right and below show various combinations with both three- and four-jaw chucks, for divisions ranging down to 15°.

Though less accurate than an indexing head, or even a gear chucked along with the work, this system is still a lot better than stepping off divisions with machinist's dividers.—*Malcolm I. Hill, Southern Pines, N. C.*



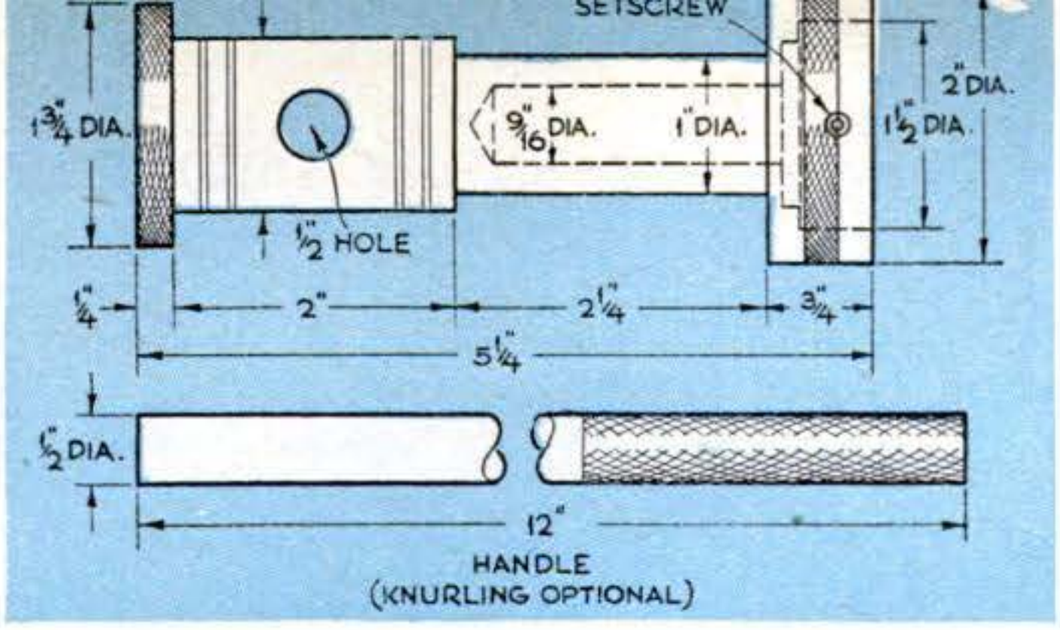


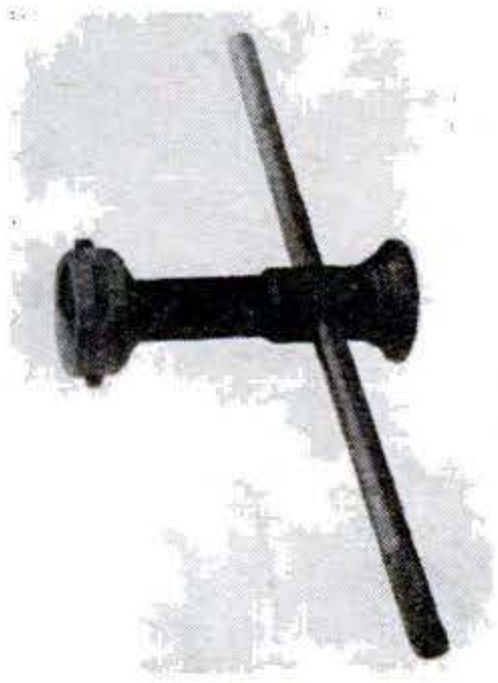


Vacuum on Sander Keeps Shop Neat. Attach an old vacuum-cleaner motor to your sanding machine to eliminate that fine layer of dust that settles over the entire workshop when power sanding is done.

Couple it to the sander opening with a short length of rubber tubing of suitable diameter. Use the old cleaner bag or wire a cotton bag to the exhaust opening as shown. Wire the motor to the sander switch so that it will start up when the sander does.

Copyrighted material





Extension Die Stock. The handle of this elongated die stock is well above the die rather than on a plane with it, as with standard die stocks. This makes it possible to thread parts—such as U bolts or multiple studs—that have little clearance.

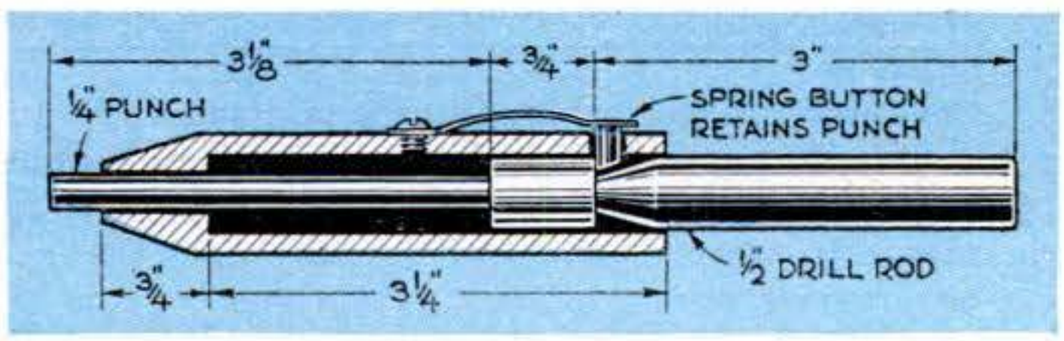
Turn the body from a length of 2″ cold-rolled steel and drill a 9/16″ hole halfway through its length for cutting long threads. Bore the head to take a ½″ die. Use a 12″ length of ½″ steel rod for a T handle.—*W. B. Goodrich, Somerville, Mass.*

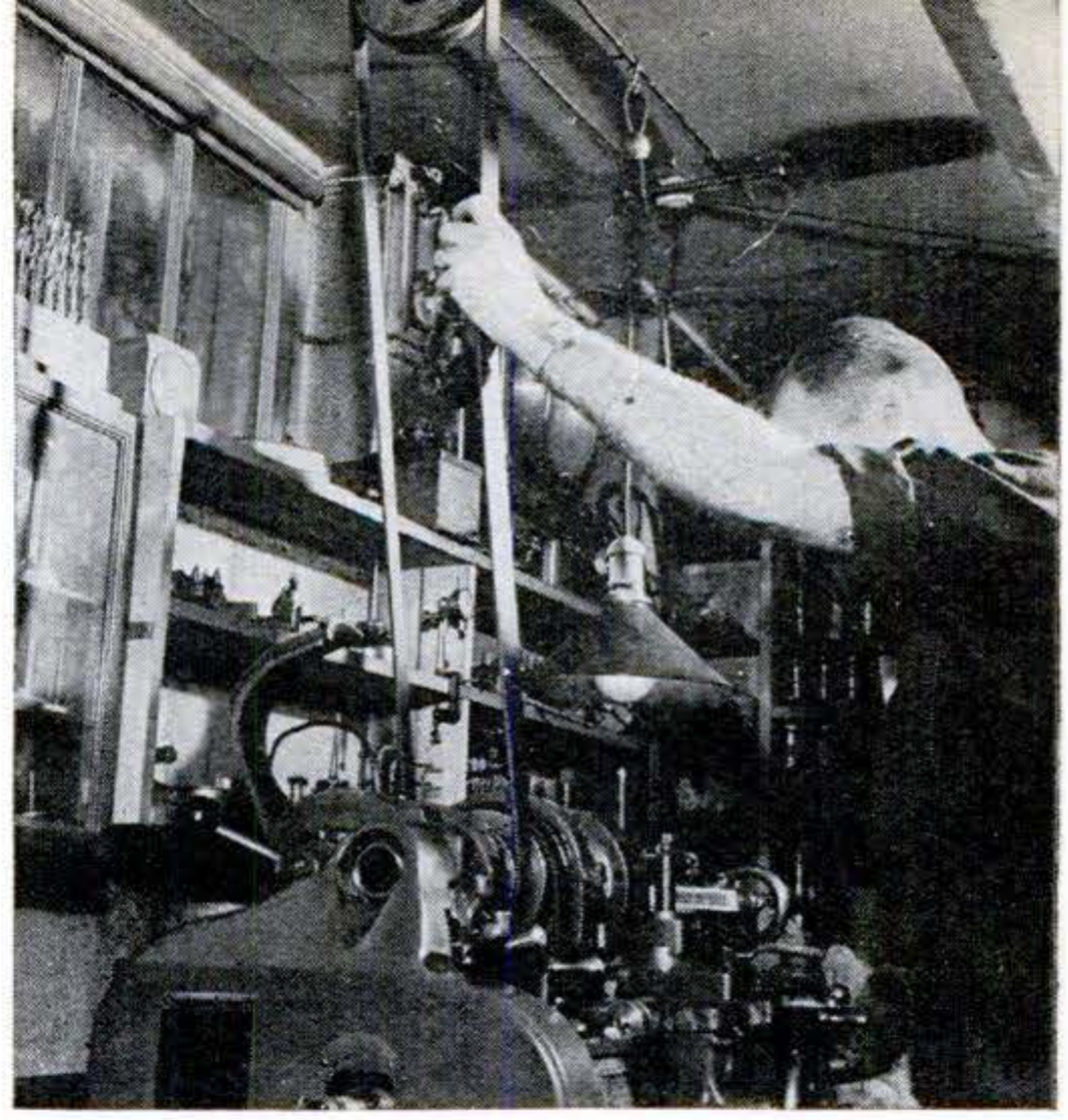
Drilling Casehardened Steel. A hand drill or power drill can be used to drill casehardened steel as readily as cold-rolled steel. The trick is to grind off the hard skin at the spot you wish to drill, and then drive in a deep punch mark.

When drilling *through* a casehardened piece, it is wise to grind off the skin on the underside as well, although the drill would probably break through anyway.—*John Krill, North Lima, Ohio.*

Sheathed Punch is Bend-proof. A long, slender punch often bends when you start it against a pin that must be driven through a shaft of large diameter.

This punch features a sheath that supports the slender stem during the first critical inch or so of driving. The sheath retracts as the punch follows the pin through the hole. As the pin is driven out, the hole supports the punch emerging from its sheath.

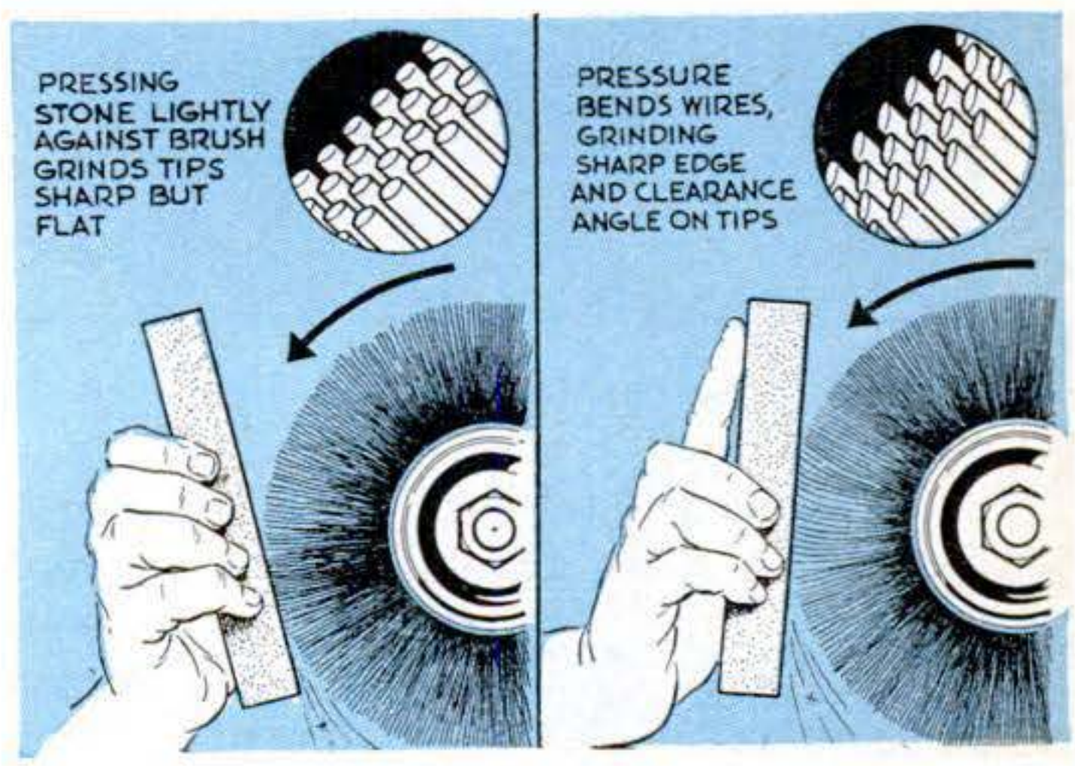




Idler Belt Turns Lathe Over by Hand. The idler belt shown above does not power the lathe. Its purpose is to provide an easy way of rotating the spindle by hand to cut those last few critical threads on a lathe threading job.

The belt runs idly on the upper pulley while threading is done under power in the usual way. As the tool nears the end of the cut, power is shut off and the spindle is turned by pulling down on the belt.

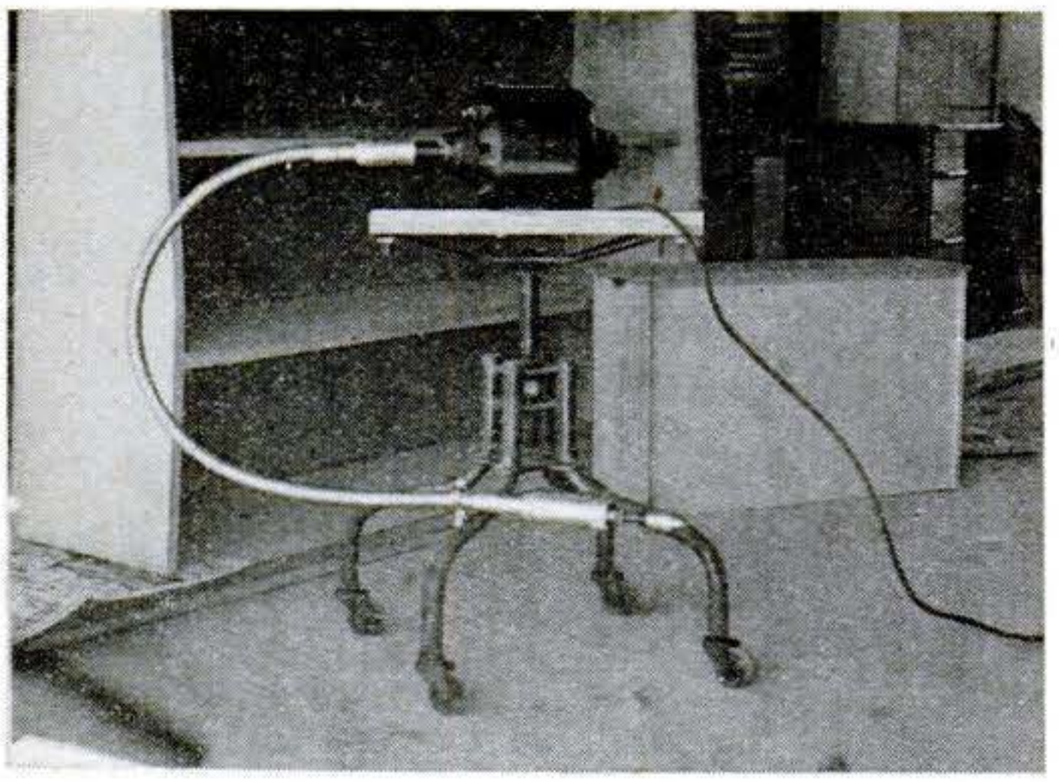
A pin-linked belt fastener permits quick removal of the belt for regular turning operations.—*F. McGuckin, Ridgewood, N. J.*



Sharpening a Rotary Wire Brush. After a period of hard use my wire brush seemed to lose its capacity for cutting. Rotating the brush at 3,450 r.p.m. against a coarse carborundum stone as shown at left above squared off the wires. Then heavy pressure was used to grind clearance. Finally, the brush was reversed on its arbor to bring the sharp edge of the wires into the work. Then it cut better than a new brush.—*A. B. Walrath, Albany, N. Y.*

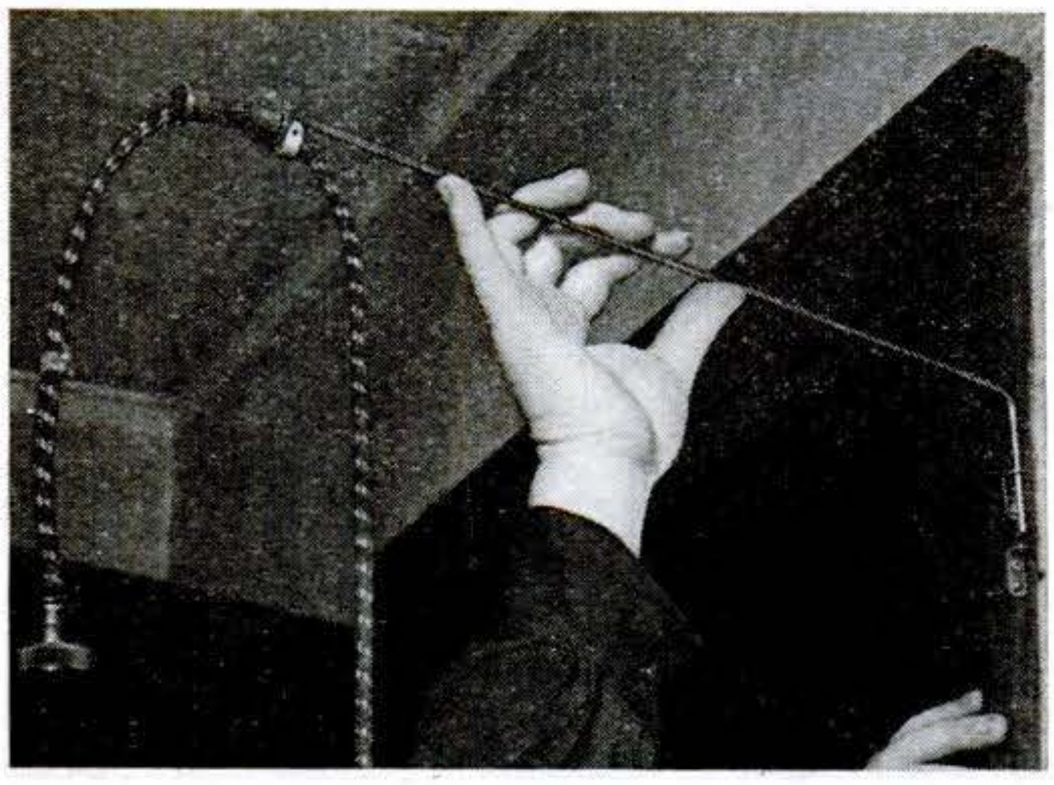
Copyrighted material

Flexible Shaft Rolls to Work



A ROLLING base for a flexible shaft and motor can be made from an old swivel chair. Unbolt the chair seat and replace it with a board or a piece of ¾" plywood. Add a tool clip to a leg of the chair to hold the chuck end of the shaft when not in use—*Chester R. Baggs, Sacramento, Calif.*

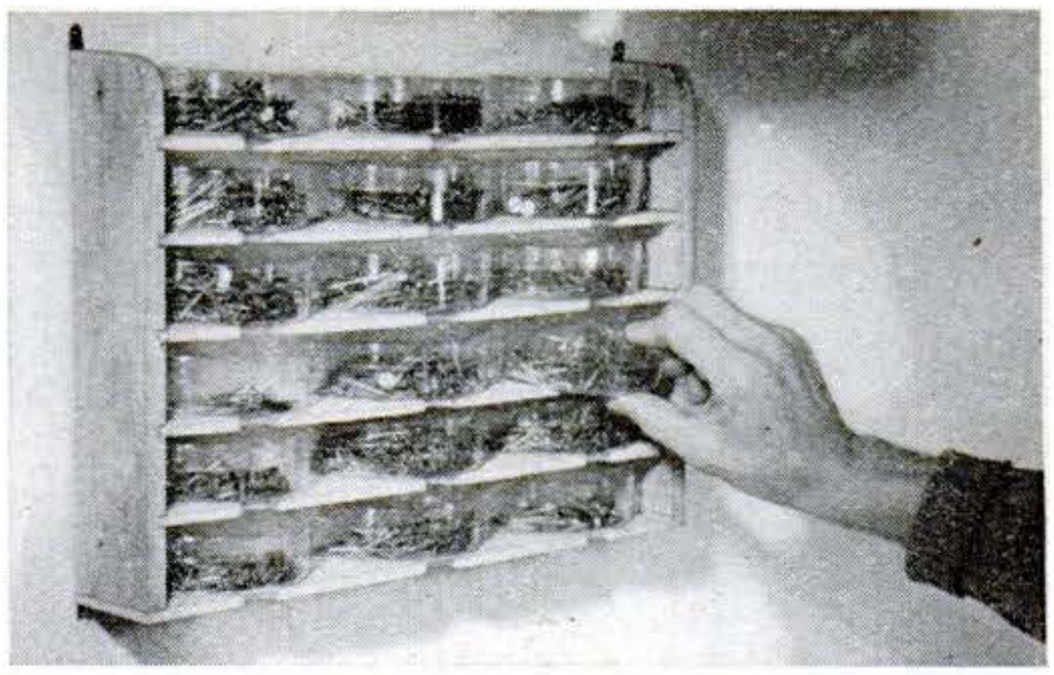
Bracket Supports Ironing Cord



THE cord to the electric iron will stay out of your wife's way with a simple bracket like this one. Bend a length of light curtain rod so the short leg will slip through two metal angles mounted on the wall. A spring soldered to the end of the rod will permit the cord to slip through without kinking.

For greater flexibility, you can make the cord on the bracket an extension line into which the iron cord is plugged.—*Carlton G. Bucher, White Plains, N. Y.*

Cheese Boxes Hold Small Parts



SCRAP wood and half-cylinder plastic boxes can be combined to make a cabinet for nails, screws, bolts, nuts, washers and other small parts. The boxes are the kind in which some packaged cheeses are displayed. Ask your grocer to save them for you. Cut semicircular notches in the shelves so you can withdraw the boxes easily.—*Bertram Brownold, Cedarhurst, N. Y.*

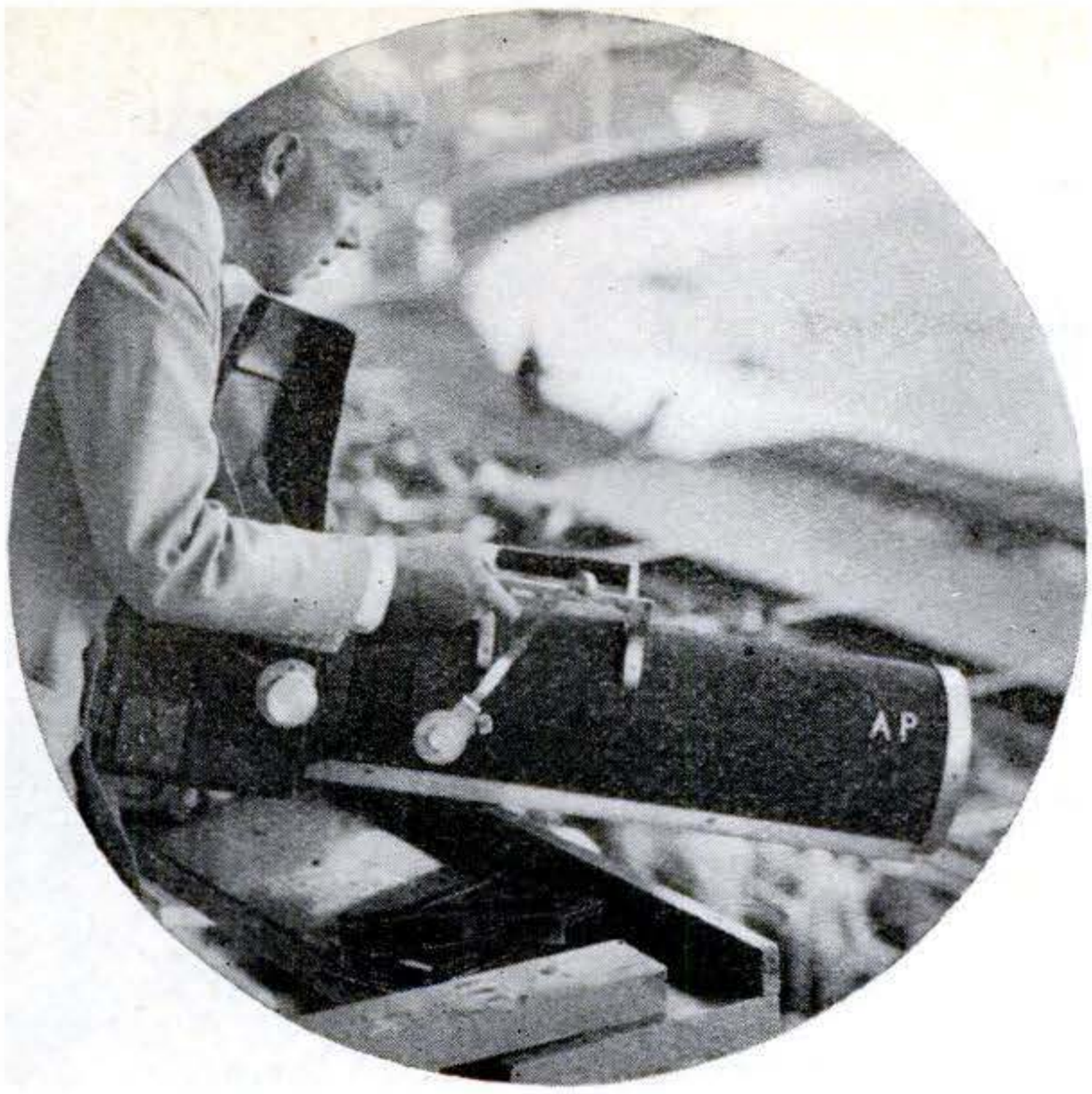
What Would You Do?

The scenery was superb and the sky gorgeous with fleecy clouds—a perfect combination for fine vacation pictures. In no time I had exposed all the cut film in my dozen plate holders. There were many more photos I wanted but we were miles from a darkroom where I could reload.

Over my wife's protests, I emptied the car trunk and doubled up inside it. While she stood outside anxiously asking "Are you all right? Can you breathe in there?" I wrapped the exposed film and reloaded the holders. A little stiffer in the joints I got the rest of my pictures.—*C. A. Veburg, Omaha.*

Have you pulled off a smart one lately? PSM will pay for acceptable contributions showing ingenious solutions of problems in the home, shop, garage or camp. It doesn't matter if it's wacky—if it works. Use government postcards only. Contributions cannot be acknowledged or returned.

Copyrighted material



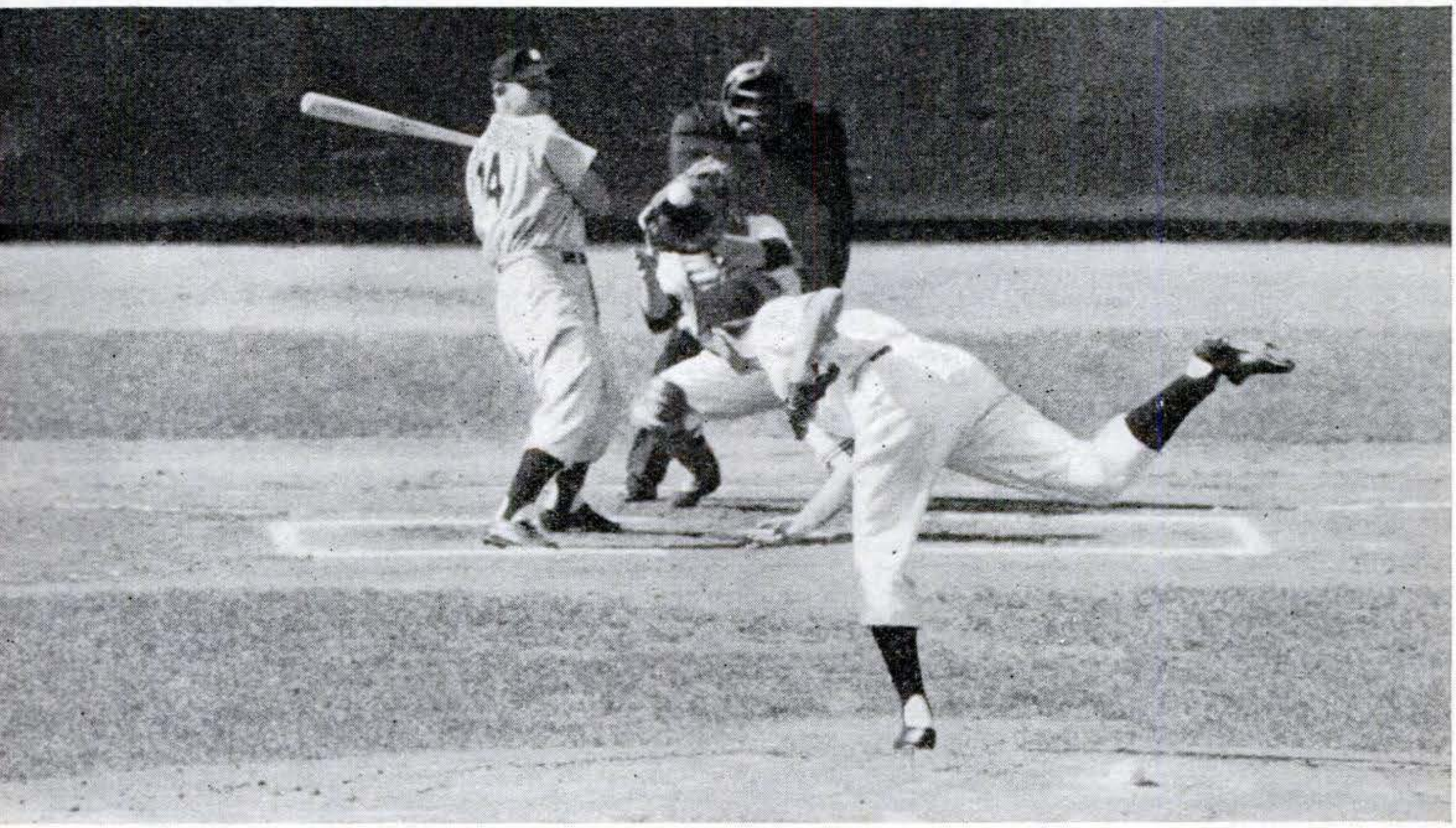
How They'll Photograph the Series

By John S. Bodkin
Associated Press Photo Editor

Big Berthas and K-25s aren't meant for snapshooting, but at a ball game they catch every bit of the action.

WHO will win the World Series next month still is any man's guess. But you can be sure of this: when the first ball is tossed in the opening game, news photographers will catch it on film, and through all the succeeding games their cameras will click a steady accompaniment to every important play.

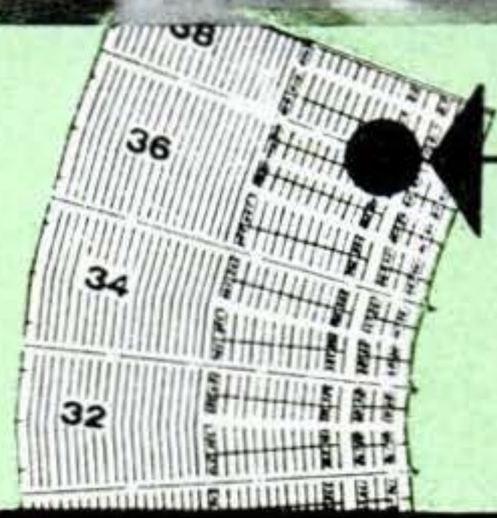
Photographing America's top sports event takes weeks of preparation. Even now, photo editors in the New York office of the Associated Press are planning how to get and han-



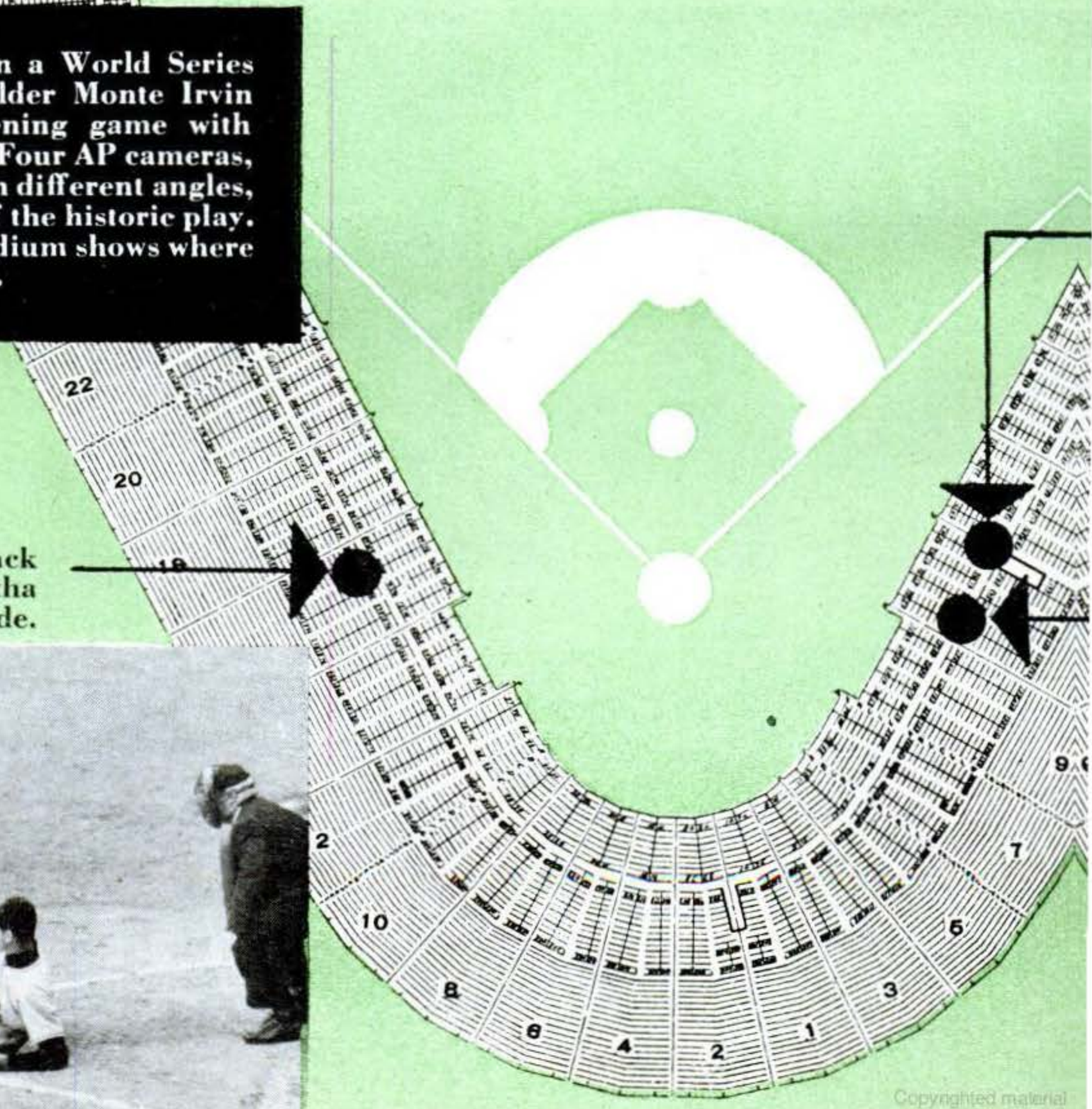
TELESCOPIC VIEW of opening pitch in third game of 1951 Series at Polo Grounds was shot by Harry Harris with 60" lens from center-field stands 400' from home plate. Note how lens foreshortens 60½' span between mound and plate. Pitcher Hearn follows through as inside pitch, headed for Westrum's mitt, makes Woodling lean away.

Copyrighted material

FROM LEFT FIELD Harry Harris peered into hood of giant 60" camera and got scene above.

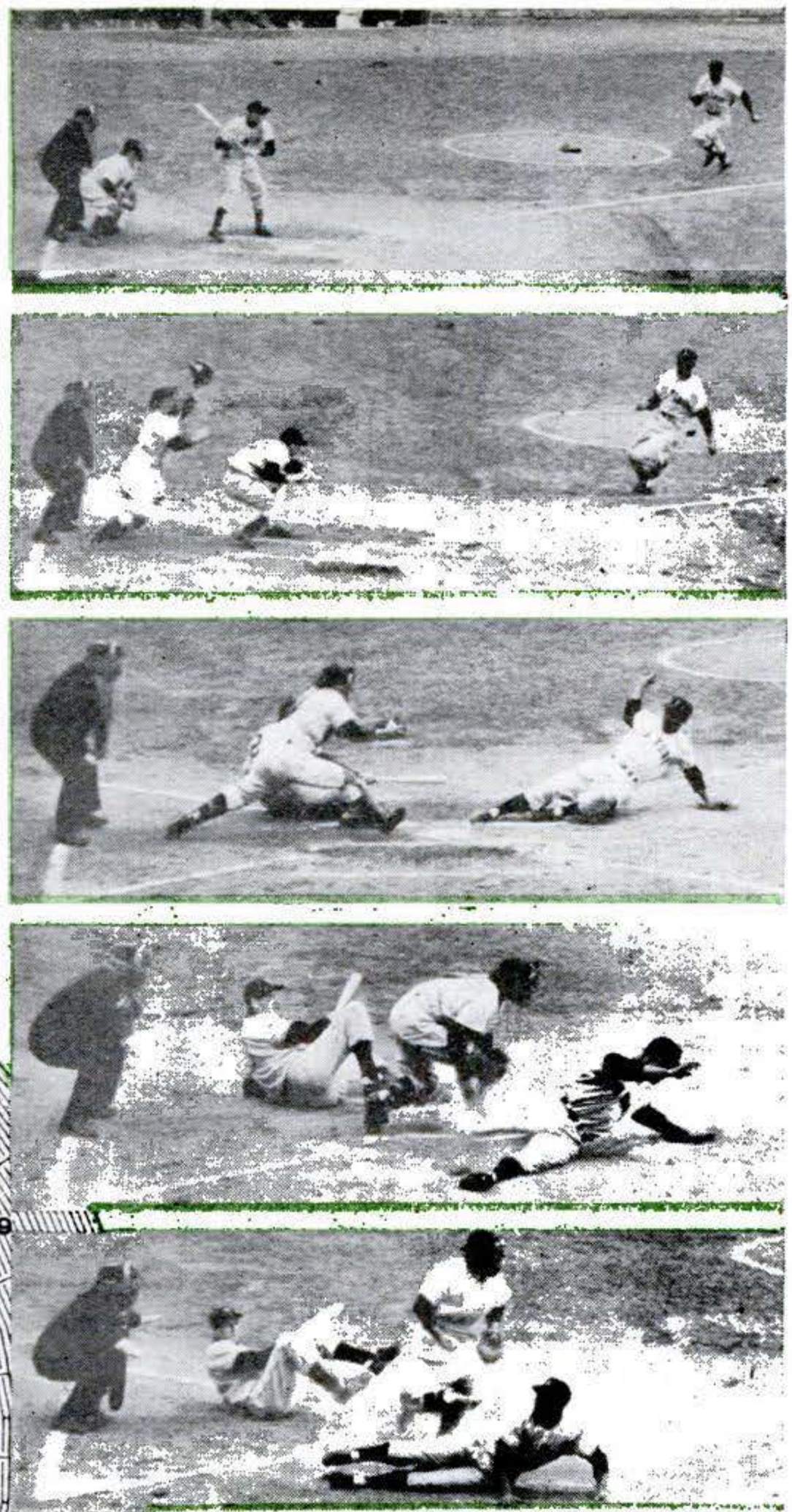


FIRST TO STEAL HOME in a World Series game was Giant outfielder Monte Irvin in first inning of opening game with Yankees last October 4. Four AP cameras, trained on the field from different angles, caught as many views of the historic play. The map of Yankee Stadium shows where each cameraman stood.



FROM THIRD-BASE SIDE Jack Harris tripped 36" Big Bertha for this view of Irvin's slide.

Copyrighted material



SERIES OF PHOTOS that Murray Becker made with sequence camera shows steal from beginning to end. Fourth shot was sent to newspapers as separate photo.

SEQUENCE CAMERA like the K-25 operated above by John Lindsay was used by Becker to catch the steal shown at left. This camera makes three exposures per second.

dle the action photos you will see in the newspapers.

By snapshooting standards, the cameras the photographers will use are very impressive affairs. Big Berthas, aimed at the playing field from high in the stands, will bring the action up close. Sequence cameras will portray hot plays step by step.

Big Berthas are 5″ by 7″ Graflex cameras—which have swinging mirrors to let you look through their taking lenses up to the moment of actual exposure—fitted with telescopic lenses. Ranging in focal length from 28″ up to the AP's 60″ unit, these telephoto lenses produce a large image of action far out on the field. Big Berthas usually are shot from low level in the photographer's box with the base resting on the box sill.

The sequence cameras used by most news photographers are the K-24 and K-25, adaptations of the aerial cameras developed during the war. Both use roll film and are driven by electric motors. When the photographer presses a button, the camera starts shooting, moving the film and working the shutter automatically to make three exposures per second.

The K-25 usually is hand-held. With a lens of medium to short length, it takes in a fairly large area of the playing field on 4″ by 5″ film. The K-24 is actually a back attached to a 5″ by 7″, usually a Big Bertha.

In recent years three photo editors have headed the AP's World Series lineup—Tony Bemben, Bob Tieken and Pat McDonald. Tony and Pat customarily work in the space

FROM FIRST-BASE SIDE John Rooney used another 36″ Bertha for crucial moment of steal.

Copyrighted material

DOUBLE PLAY. Plans for photo coverage of a game usually include a Speed Graphic with a lens that will show both first and second bases on one negative. Camera is set on clamp stand on first-base side. When a close double play occurs, photographer merely has to trip the shutter. Here, Yankee first baseman Joe Collins reaches for throw from shortstop Phil Rizzuto to complete double play in second inning of Series opener at Yankee Stadium last October 4. Eddy Stanky, Giant second baseman who bounced into the twin killing, races to first as pitcher Dave Koslo is forced at second. Photographer John Rooney made the picture.

at the park where a portable Wirephoto transmitter is waiting to rush action photos to the newspapers. Bob handles the big job of editing sequence material.

Basic camera assignments call for Harry Harris and John Rooney to man Big Berthas, one from the first-base side, one from the third-base side. John Lindsay and Murray Becker usually operate sequence cameras, also from opposite sides of the field. Two other Big Berthas are strategically placed in the stands.

Other photographers are assigned to roving jobs. Before the game they pick up miscellaneous shots. During the game, one of these men works with a Graphic equipped with a wide-angle lens, making general views that become diagrams of key plays.

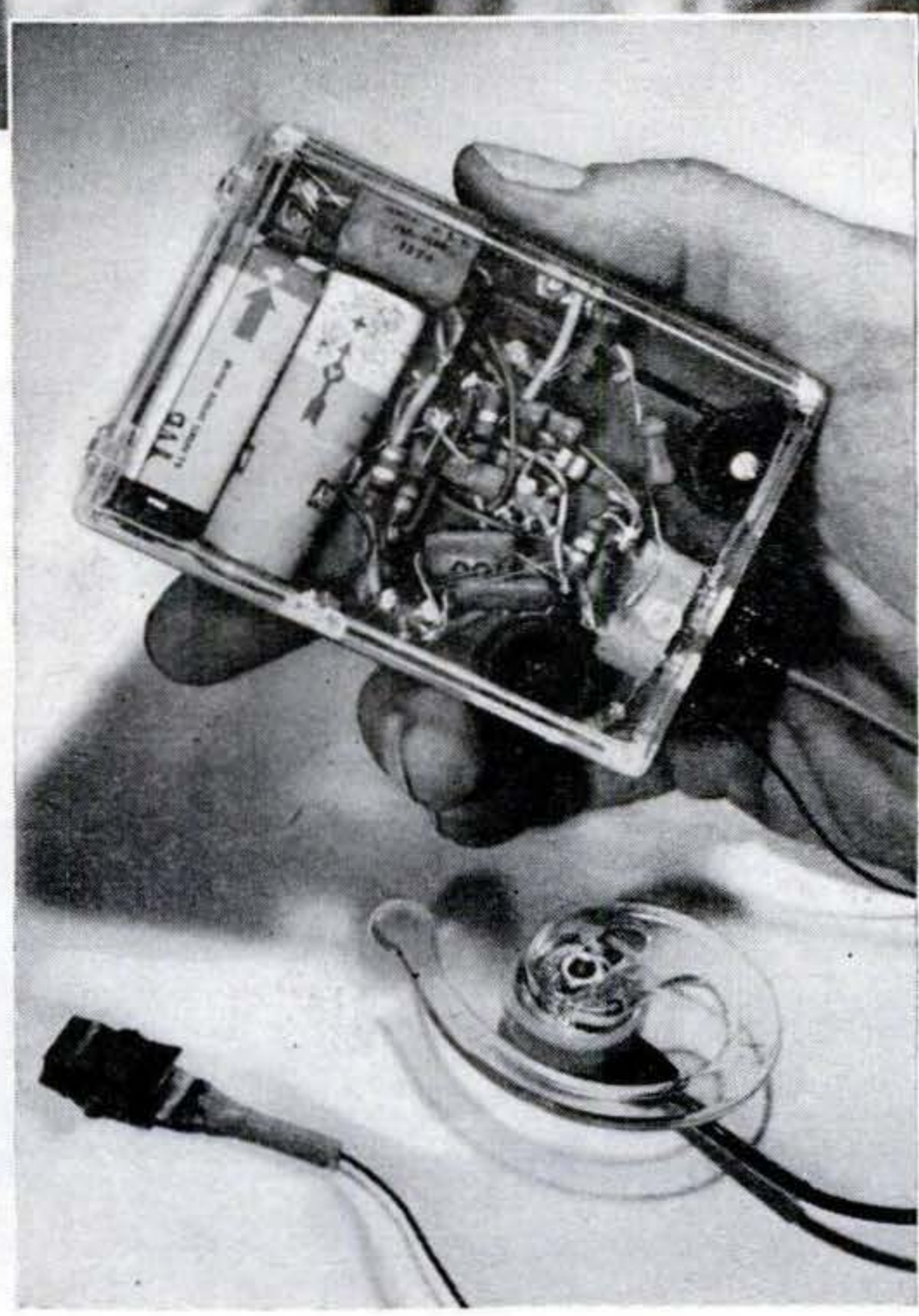
Waiting messengers hurry away with film holders and caption notes. Fast development in the ball-park darkroom prepares selected prints for Wirephoto transmission, and in minutes, the pictures are on their way—so that you can see some of the day's baseball action at the same time you read about it. END

CONFUSION reigned at home plate in the final game of 1939 Series between Yanks and Reds at Cincinnati, when John Lindsay shot this scene. Three runs scored after Ernie Lombardi, Reds catcher, was knocked down and dazed. On Joe DiMaggio's single, Frank Crosetti (No. 1) and Charley Keller scored. As the injured Lombardi remained down with Bill Werber trying to help him, DiMaggio —beyond Bill Dickey (No. 8)—also scored.

Copyrighted material

A 7-Ounce Radio You Can Build

Its sensitive circuit uses the latest hearing-aid tubes, pulls in news and sports programs wherever you are.



By E. L. Garrett

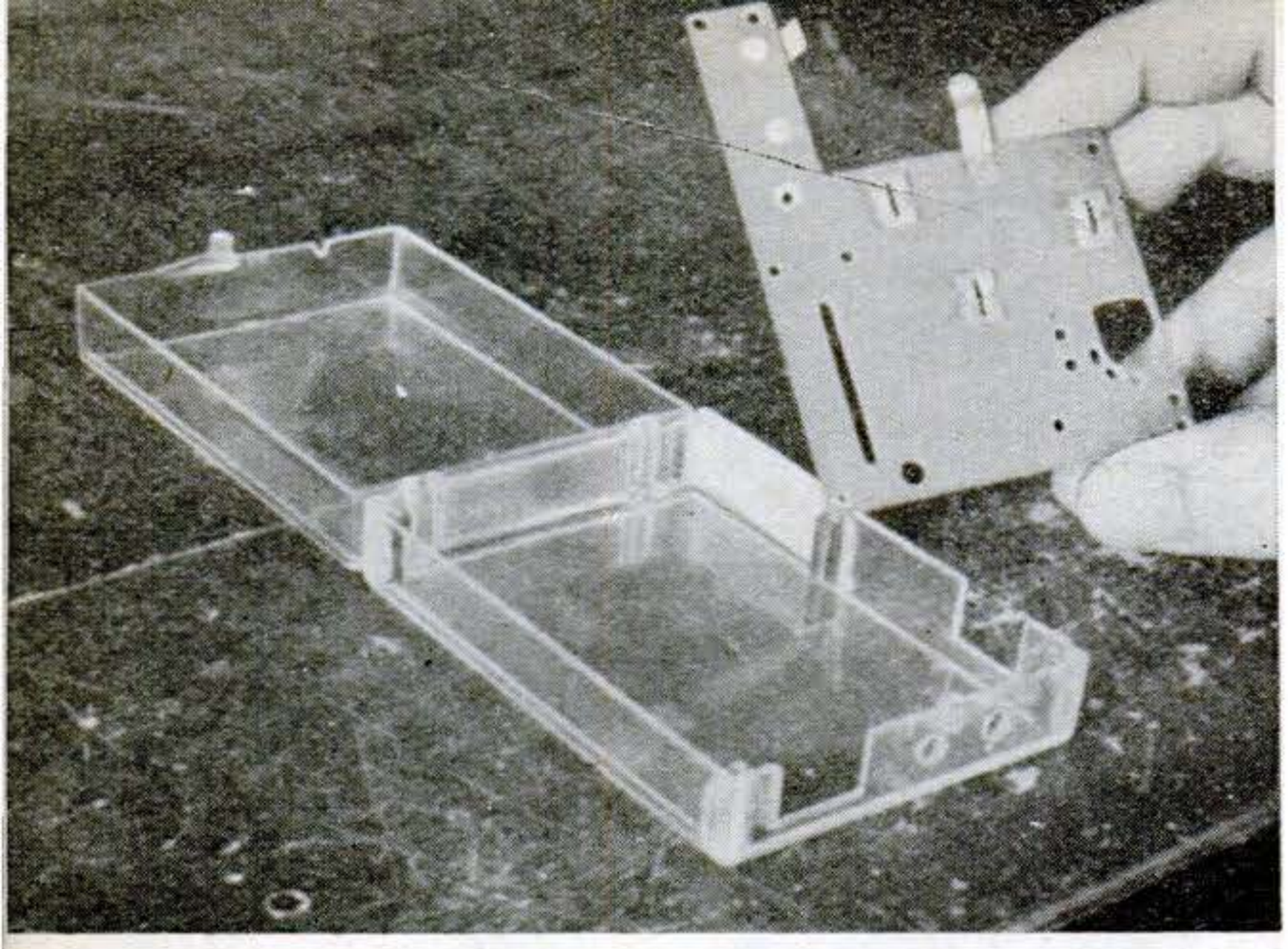
SMALL enough to slide into a shirt pocket, this tiny homemade radio is a perfect companion at sports events or any place else that you want to pick up spot broadcasts.

Its clear-plastic case is hardly bigger than a cigarette pack. Fitted inside are three of the newest hearing-aid tubes, long-life batteries and a slug tuner.

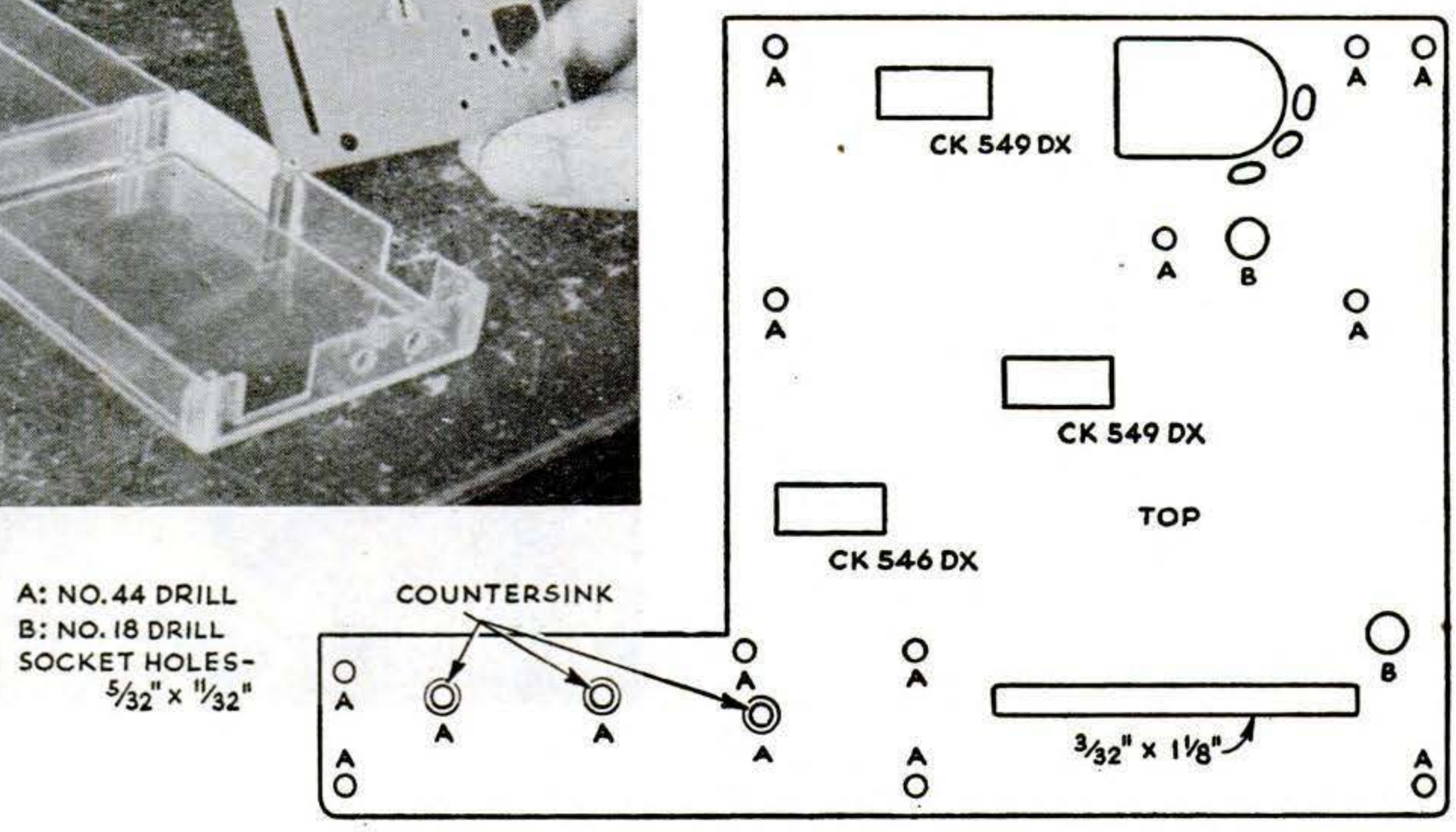
The parts are not hard to get; you can buy them from the big mail-order radio suppliers. They will cost about $25 all told, but whatever you can scrounge from your scrap box will pare that down. The radio can be comfortably built in three evenings. It weighs less than half a pound with batteries, antenna and earphone.

Case and chassis. Don't start work until you've bought a suitable case, since it will govern chassis size and parts layout. I found a small fly box at a fishing-tackle

Copyrighted material

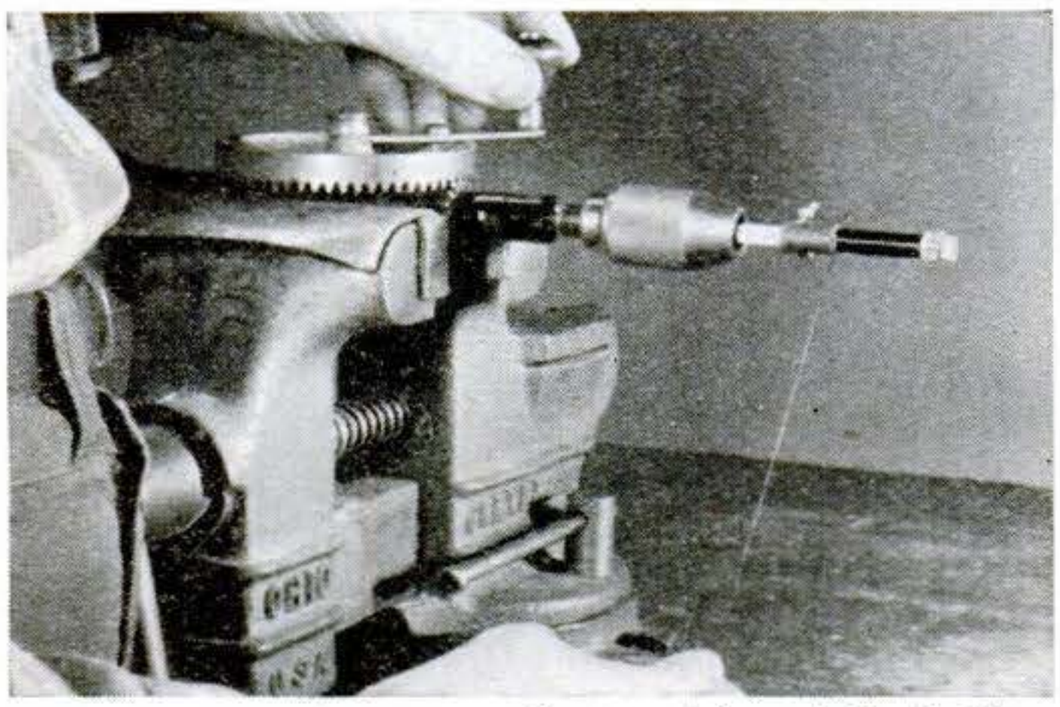


FLY BOX of transparent plastic makes a sturdy, lightweight case. Two slots in side and end let the ¾″ control knobs protrude slightly.



store that does fine. It measures 1¼″ by 2⅝″ by 3⅝″ outside.

The chassis is a 1/16″ panel of Bakelite-impregnated linen, mounted flush within one section of the case on four cemented-in posts. The drawing above is actual size and shows the exact location of all holes.

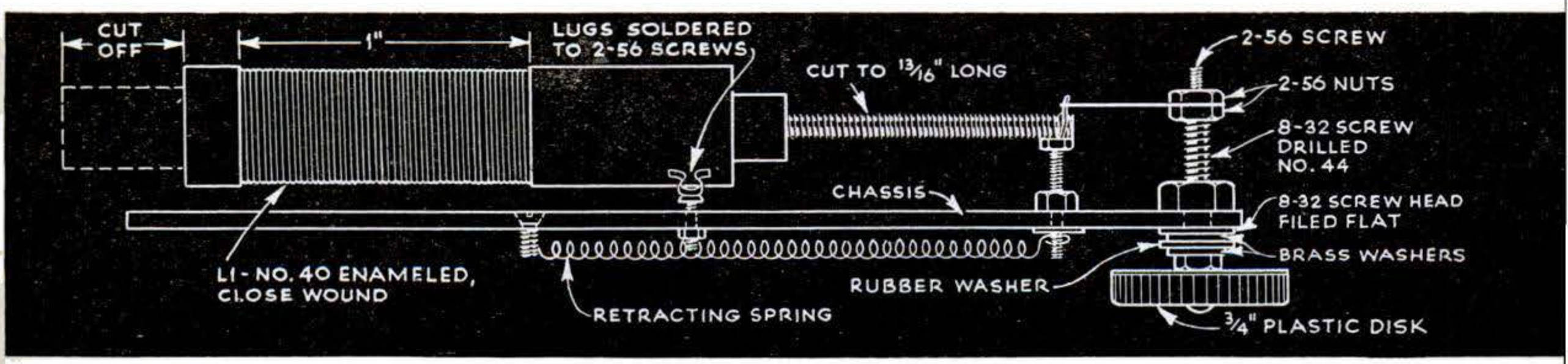


COIL WINDER is just a clamped hand drill. Use light finger pressure to control wire tension and to lay the turns evenly against each other.

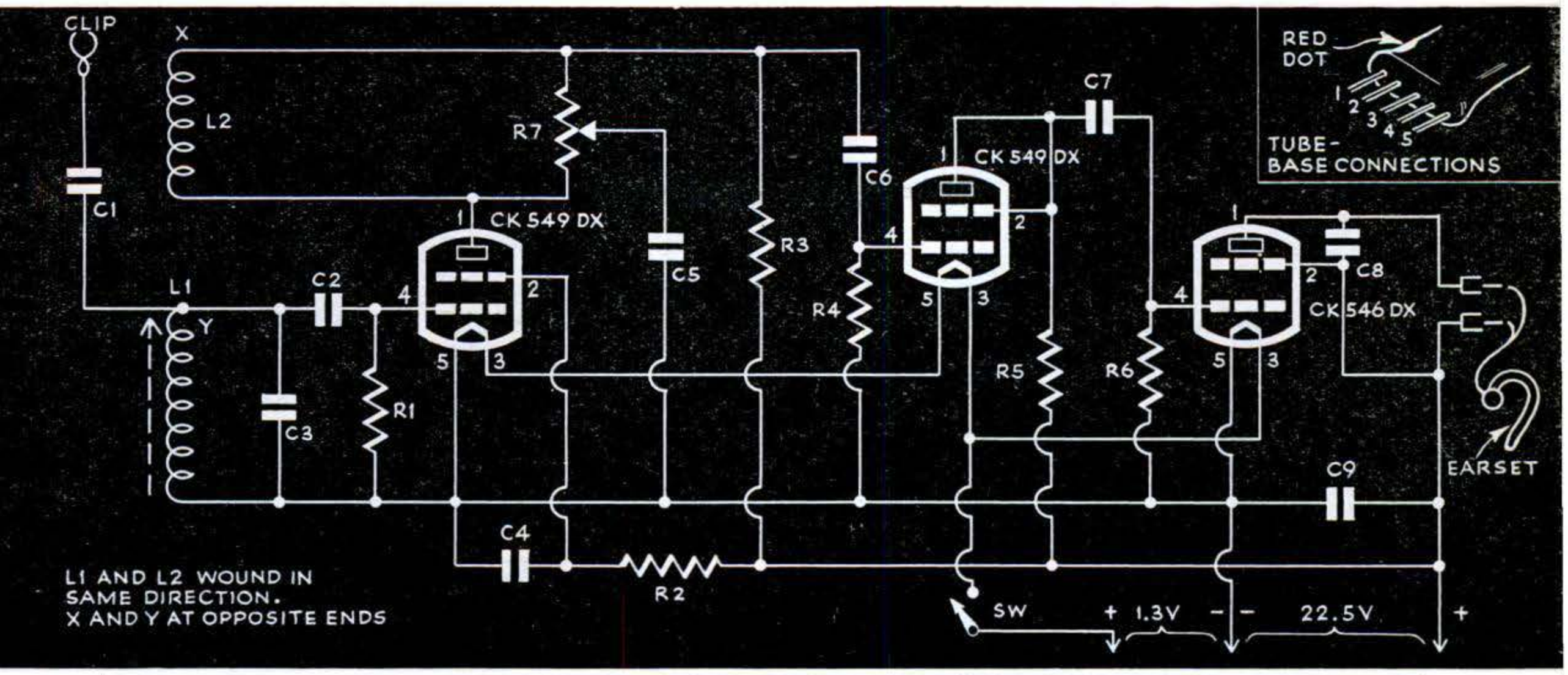
Tuner. Regular variable condensers of the required range are much too large for tiny receivers. I found a TV horizontal-width coil with a powdered-iron core that could be rewound to make a compact tuner that covers almost the entire broadcast band.

First the original winding was removed and the coil cut short. Very fine wire must be used to get enough turns on the coil. I rigged a winder by clamping a hand drill in the vise, with the coil form pressed on a stub of dowel in the chuck. The grid winding (L_1) goes on first—a single layer of No. 40 enameled wire 1″ long, which works out to about 315 turns. I held the ends temporarily with bits of tape until I could secure them with dabs of household cement. The ends are soldered to the two lugs on the coil.

The plate winding (L_2) is put on a ⅜″ paper tube that is later slipped over the grid coil. It consists of 75 turns of No. 28 enameled wire, wound in the same direction as L_1.



Copyrighted material



LIST OF PARTS

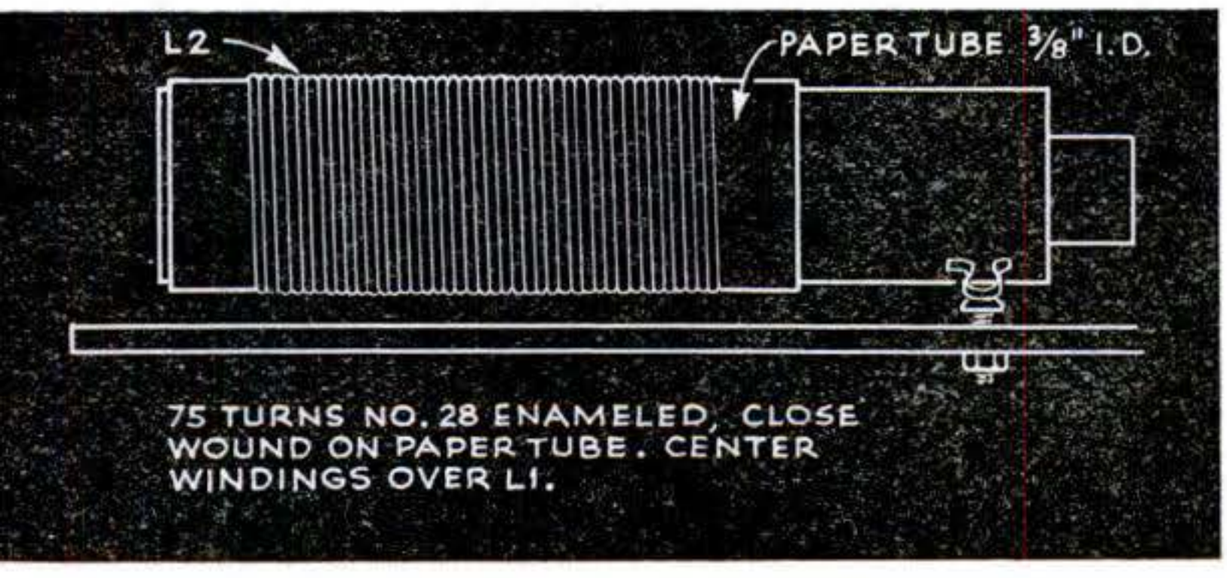
C1, C3: 56-mmf. ceramic.
C2: 250-mmf. ceramic.
C4: .01-mfd. midget paper.
C5: 500-mmf. ceramic.
C6, C7: .001-mfd. midget paper.
C8: .004-mfd. midget paper.
C9: .1-mfd. midget paper.
R1, R4: 1-megohm, ⅓-watt carbon.
R2: 100,000-ohm, ⅓-watt carbon.
R3: 270,000-ohm, ⅓-watt carbon.
R5: 470,000-ohm, ⅓-watt carbon.
R6: 10-megohm, ⅓-watt carbon.
R7: 500,000-ohm hearing-aid potentiometer with switch, used as regeneration control (Centralab B16-218).
L1, L2: Homemade tuning coils.
Raytheon CK549DX subminiature tubes (2).
Raytheon CK546DX subminiature tube.
3 subminiature 5-contact tube sockets.
2-prong crystal socket (for phones).
Fahnestock clip (for antenna).
No. 40 & No. 28 enameled wire for coils.
Iron-core horizontal-width coil for TV (Miller type 6198).
Plastic case.
Midget Earset (Telex, 2,000-ohm).
A Bat.—Mallory RM12 (1.3V).
B Bat.—Olin 0915 (22½V).

I mounted the remade coil on two 2-56 screws soldered to the lugs. The threaded shaft that moves the core was cut short and another 2-56 screw soldered across the end. This screw moves in a guide slot in the chassis, and to it are secured the retracting spring and the end of the heavy thread that draws out the core. As the drawing shows, the set is tuned by turning a ¾" knob that draws up the thread and core.

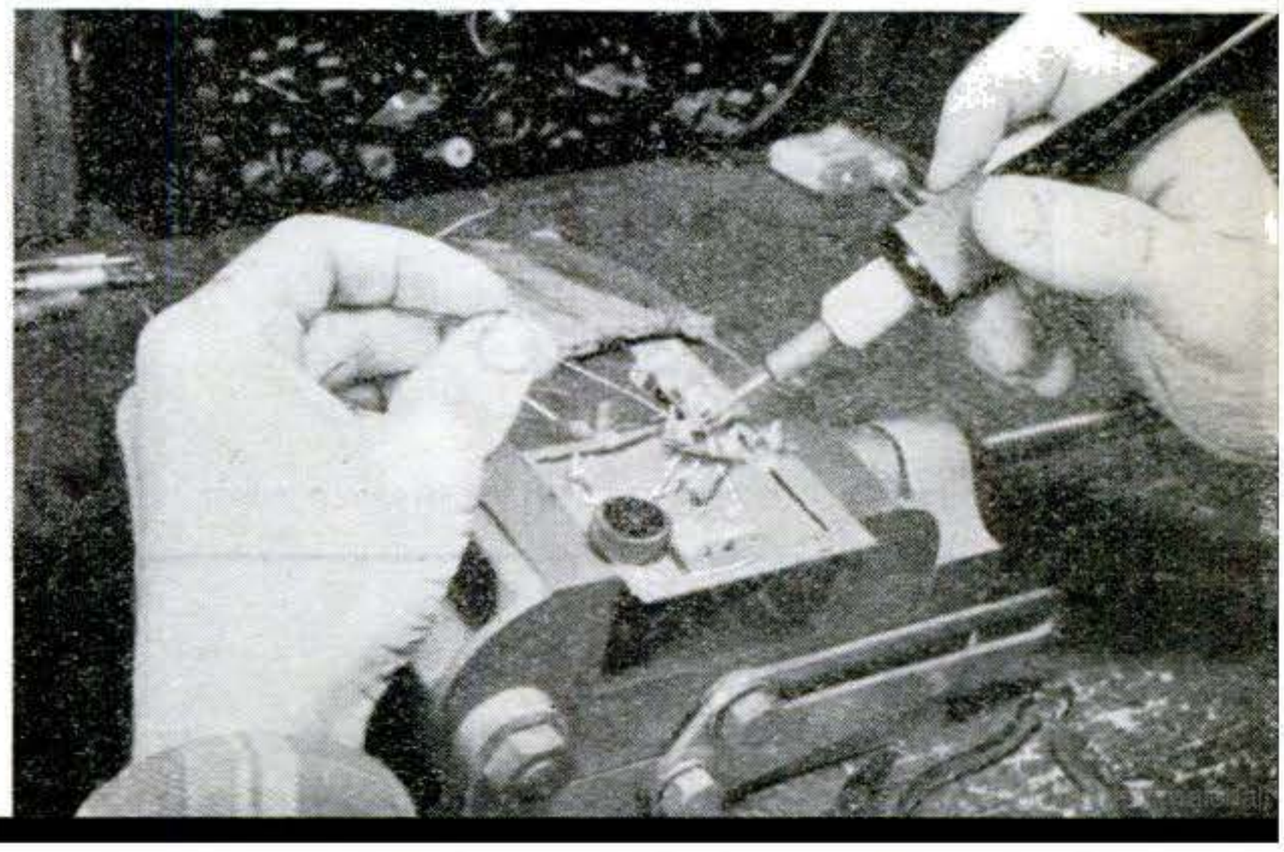
Wiring. A 100-watt iron is too clumsy for so small a job as this. Get one of the little pencil-tip ones and use the lightest hook-up wire you can find. Wire up the filament circuits first and then add the resistors and condensers beneath the chassis.

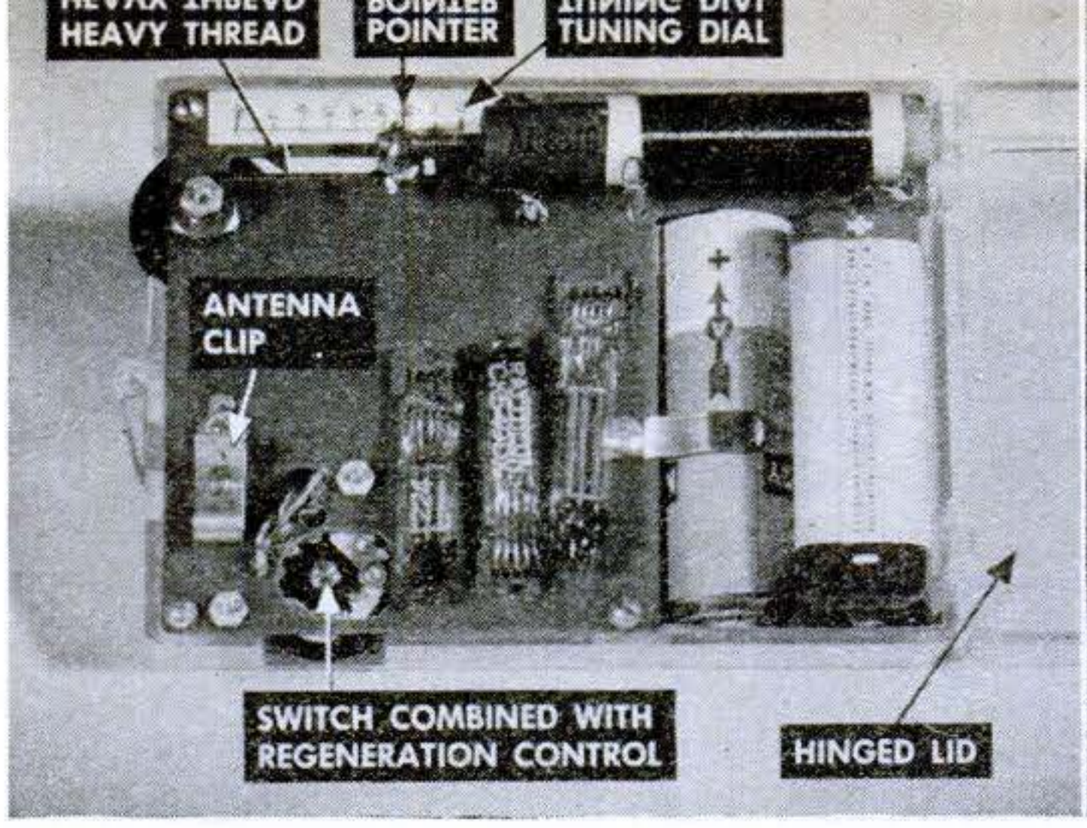
Tube sockets are held in the chassis with household cement, and tubes are retained in their sockets by their leads alone. Clip off the leads ⅜" long, poke the ends in the sockets and gently bend the tubes over parallel with the chassis. Mark one end of each socket with a red dot of fingernail polish so that you can always insert the tubes with the right orientation—the dot is nearest the plate lead.

Antenna and phones. For an antenna

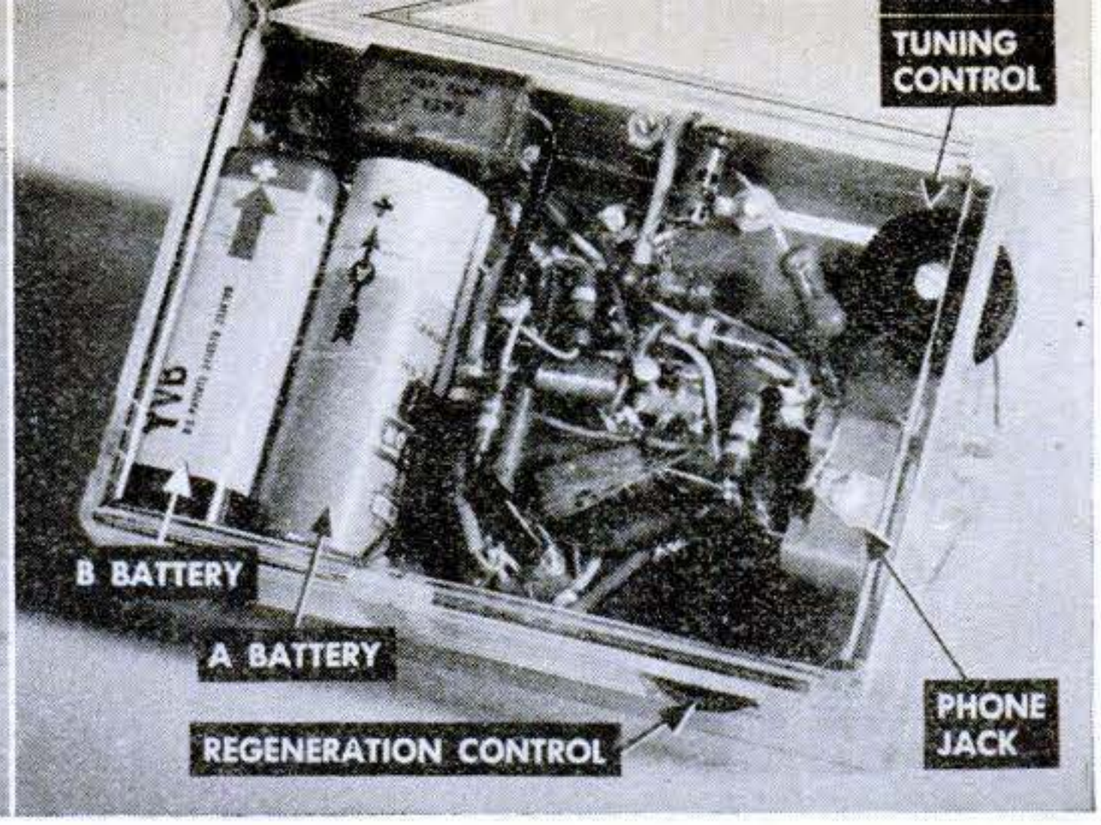


IT'S FUSSY BUT FUN to wire up midget chassis. A small soldering iron is a must. For convenience, chassis is clamped in a drill-press vise.





CASE ISN'T CROWDED and could even have been a bit smaller. Subminiature tubes are 3/16″ thick. Photo is half actual size.



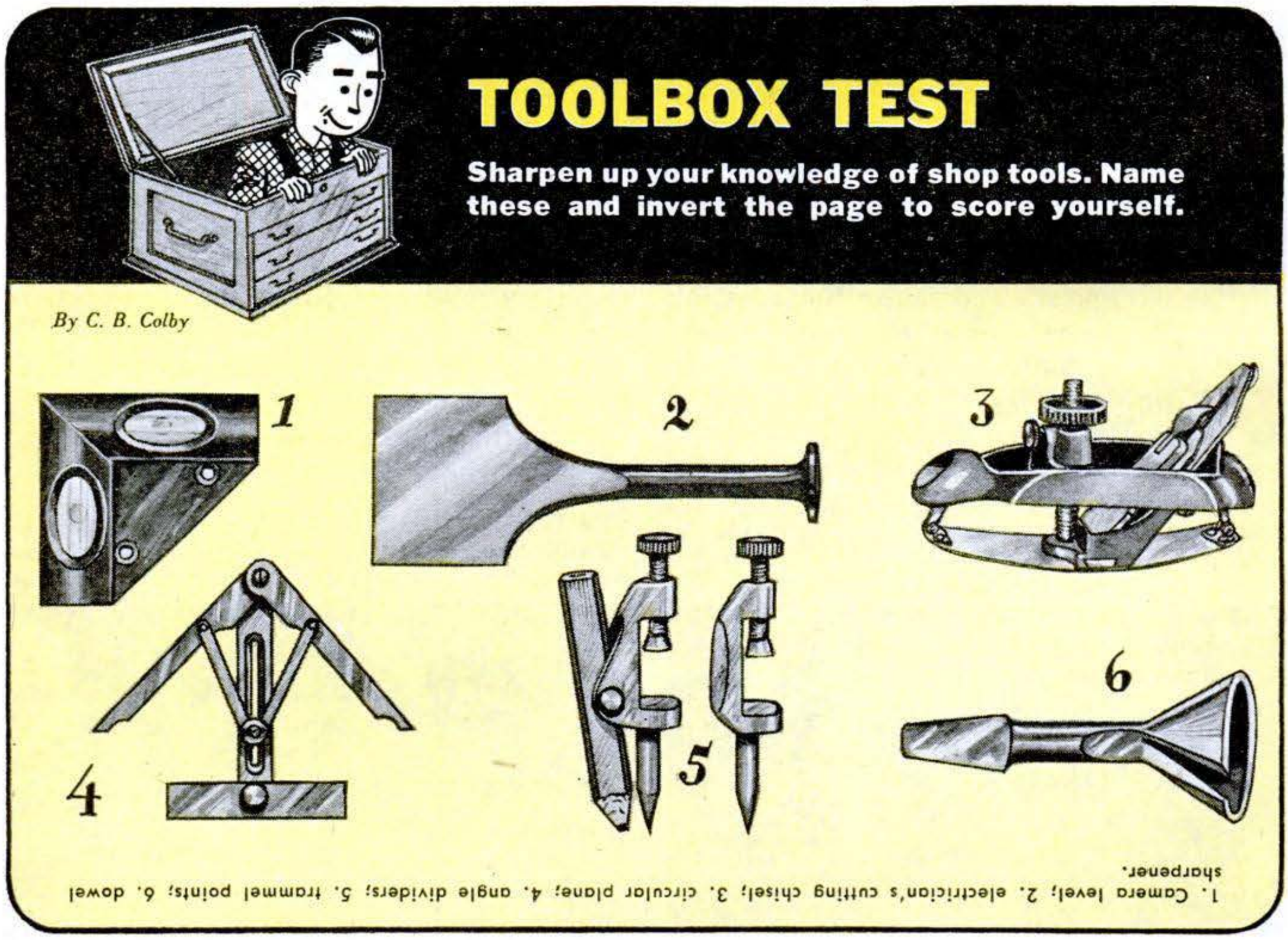
NEGATIVE ENDS of batteries press against piece of springy metal cemented inside case. Other ends press against clips in chassis notch.

I simply use a 3′ length of wire with a clip on the end. Close to a station you will receive programs with this alone; farther away, you just attach the clip to any handy metal object—window screen, bed spring, radiator or lamp.

Since regular earphones would dwarf so small a set, I bought a modified hearing-aid phone called an Earset. It comes with a plug, but since I didn't want to cram a bulky phone jack into the case, I attached phone tips to the cord. A crystal socket makes a jack for them in the case.

Operation. It's best to keep the regeneration control near the point of oscillation (squeal) because that sharpens the tuning. This control also functions as a volume control, though it has limited range. For major changes of volume, the best way is to switch the antenna clip to a different metal object that brings in a stronger or weaker signal.

The tubes specified are low-drain ones giving maximum battery life. To save on the parts cost, you could substitute a pair of CK534AX ones and a CK536AX. They will perform the same, use up the A battery a bit faster, but cost substantially less. END



Copyrighted material

Pint-Sized "Dynaflows" Run Home Machines

They're the answer to a gadgeteer's dream. One lever controls all speeds forward and back—and acts as a brake, too.

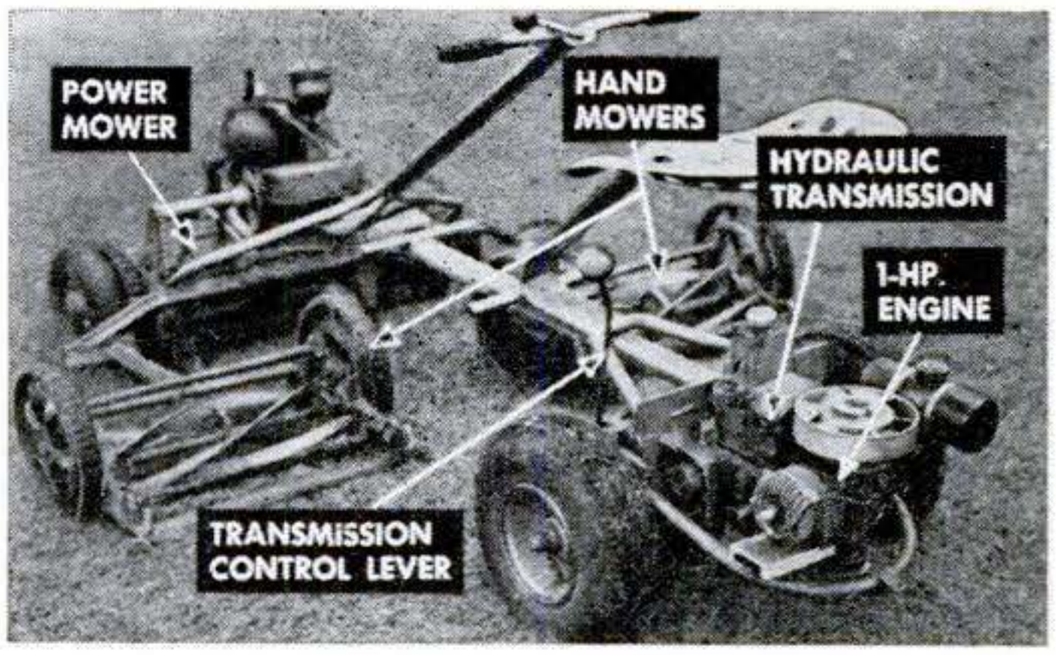
BOYMOBILE powered by a governor-controlled, two-cycle engine has belt drive to hydraulic unit, chain drive to rear wheel. Driver shoves lever forward to go, pulls to neutral for braking, and back for reverse. Car starts up smoothly, can do 12 miles per hour.

DETROIT has no corner on automatic drives. With an assist from the Air Force, basement mechanics are putting hydraulic transmissions into homemade scooters, garden tractors and other dream projects.

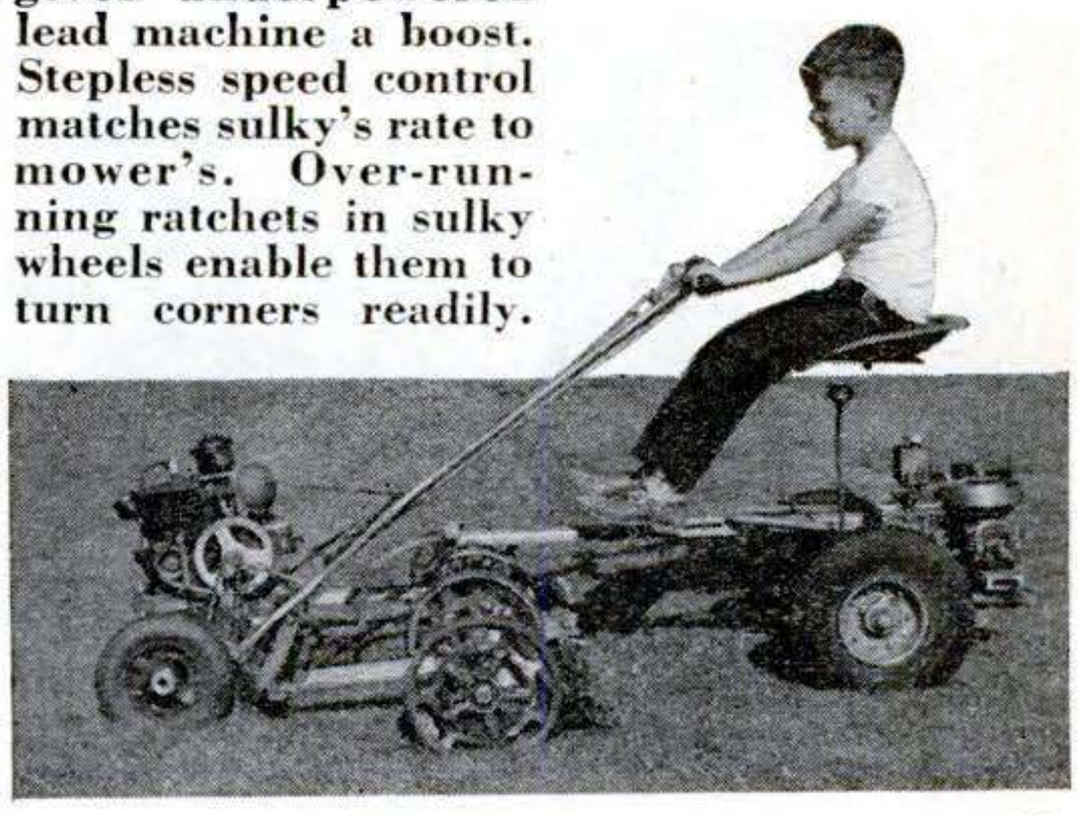
The assist takes the form of hydraulic speed reducers, originally made by Vickers and Westinghouse for controlling bomber gun turrets. These slick mechanisms originally cost several hundred taxpayer dollars apiece. You can buy one on the surplus market by plunking down around $50—not hay but still a bargain price if you need what it's got.

Heart of unit is a hydraulic pump which your motor drives at constant speed. Valves control the amount and direction of flow of fluid to a hydraulic motor. By shifting a lever you get any speed between zero and the input r.p.m. At neutral position, the output shaft is hydraulically locked, serving as a brake. Flip the lever the other way and you have the same speed range in reverse.

On a drill press, lathe or milling machine such a drive gives stepless speed selection without belt shifting. The photos show how J. H. Jacobs of Osseo, Minn., uses it on gas-driven rigs. By fitting one unit with quick-change couplings, you could switch it around among several machines. END



GANG GRASS CUTTER is spearheaded by a 1-hp. gas mower to which two hand mowers are hitched. A riding sulky, driven by a 1-hp. engine through a hydraulic transmission, gives underpowered lead machine a boost. Stepless speed control matches sulky's rate to mower's. Over-running ratchets in sulky wheels enable them to turn corners readily.



SICKLE MOWER is easier to handle in close quarters and around flower beds with hydraulic unit replacing former drive. It is controlled by single lever.

Copyrighted material

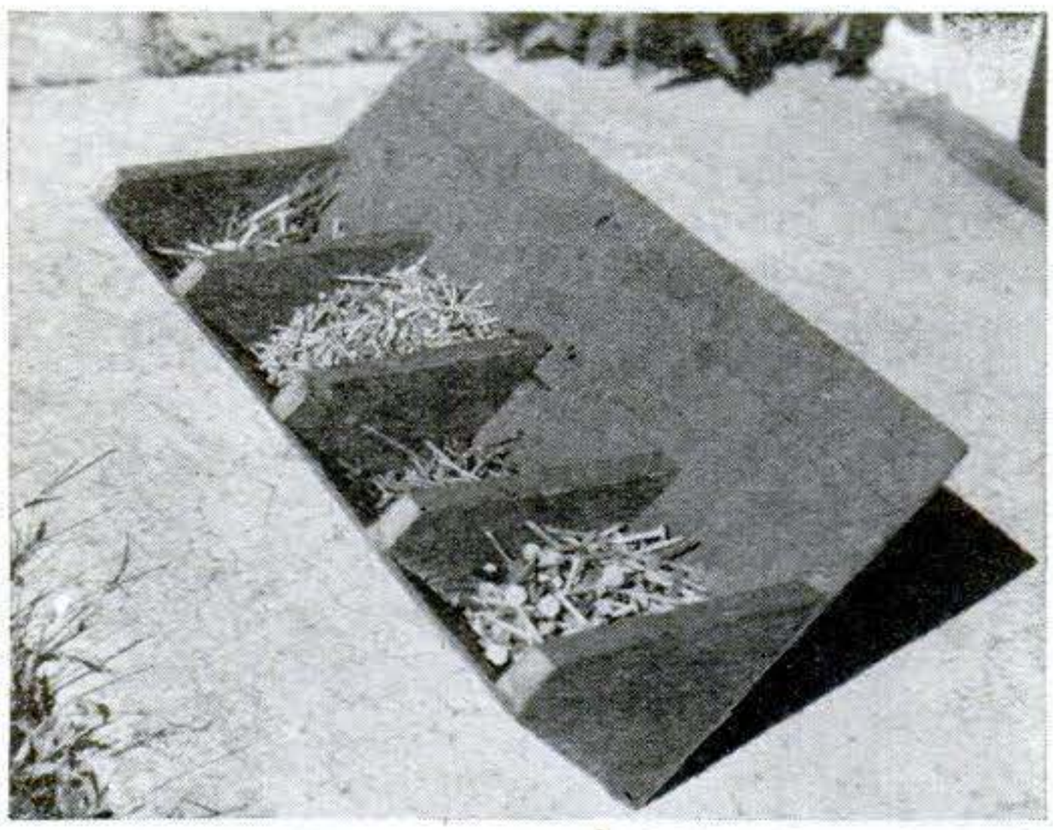
New Shingles Cover Old Roof

Save the time and work of ripping off the old shingles. Besides, a double roof gives better insulation and protection.

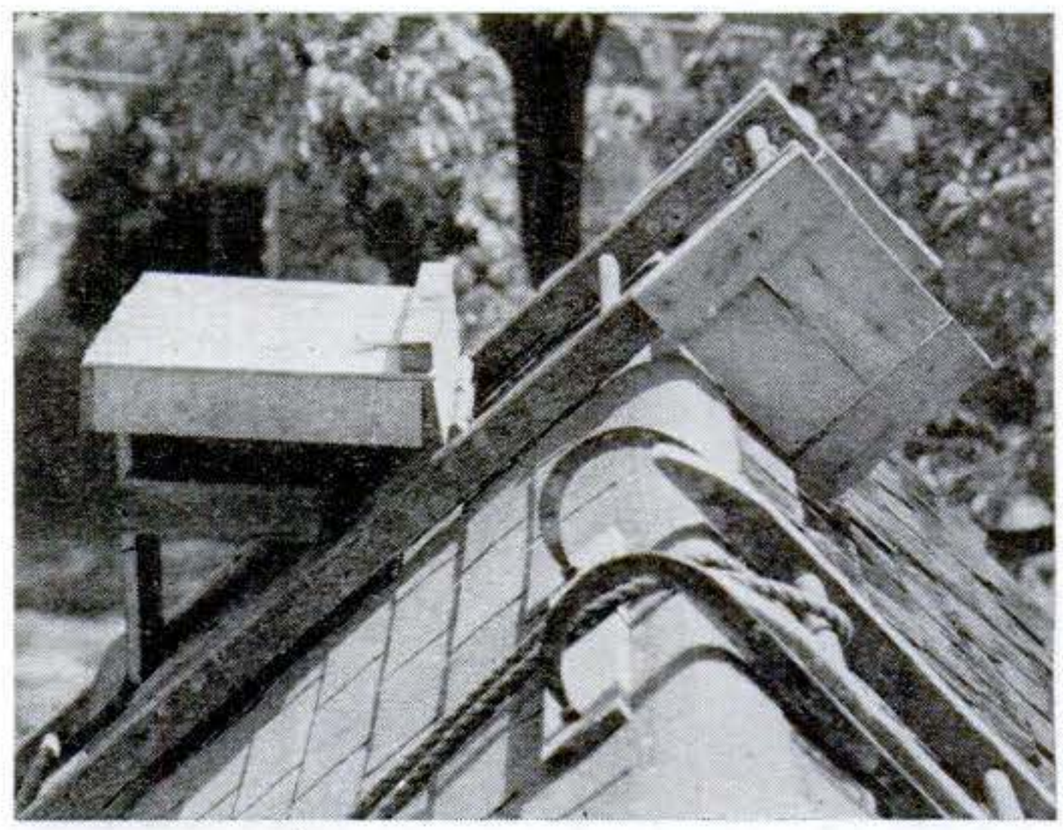
THE roof of the old house was in such bad shape that birds heavier than a sparrow were afraid to land on it. I can't prove that, but if you'll look at the photo below, you'll see what I mean about a roof in bad condition. That's why I made it my first project in fixing up the old place.

I left the wooden shingles in place and

Old wood shingles were badly weathered. Roof was re-covered with asphalt shingles over them.



NAIL BOX. Two pieces of hardboard with scraps of wood for partitions form this handy box. Design it to fit slope of roof. It is held in position by resting it against two nails driven in old roof.



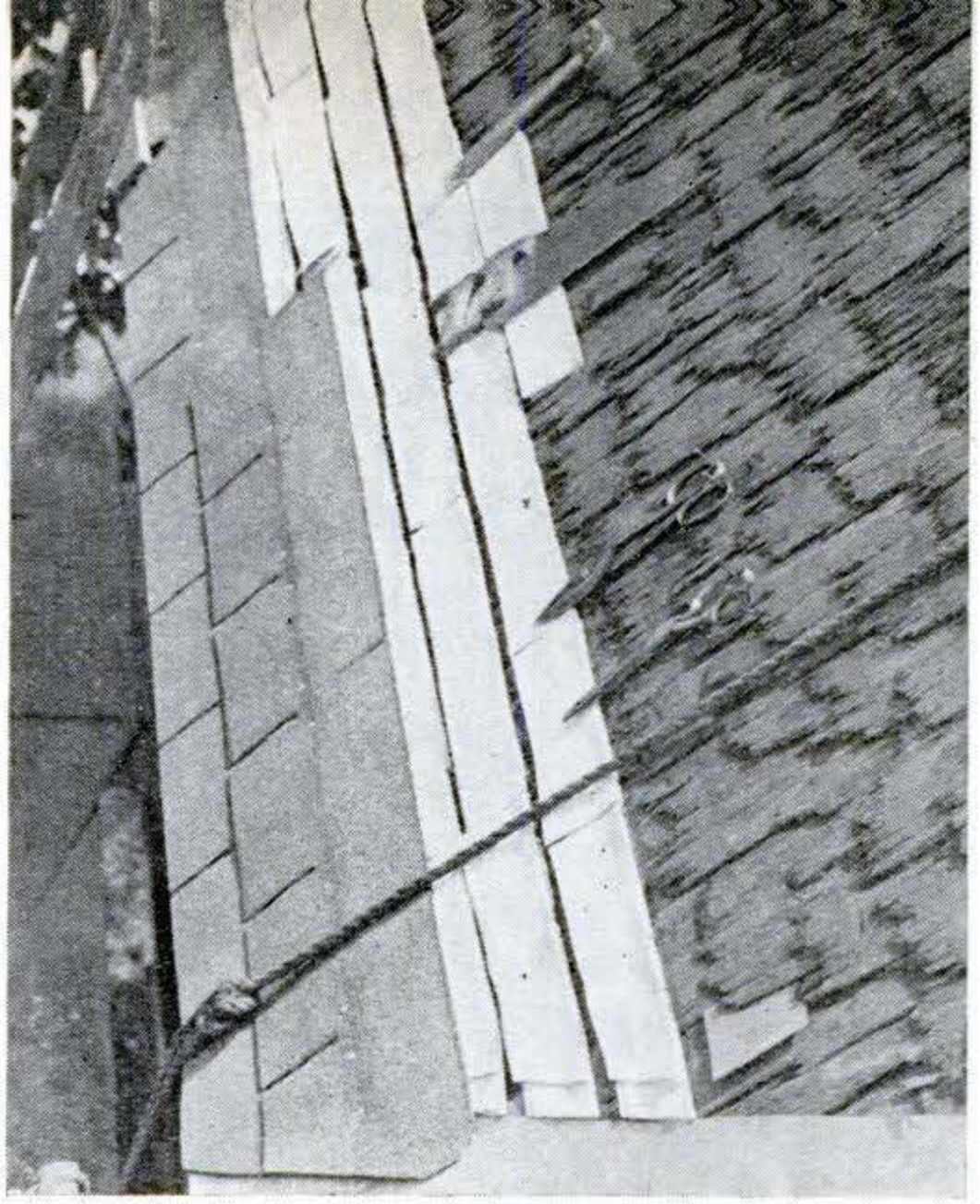
LADDER SETUPS. Hooks are a must when working on a steep roof. Metal hooks (foreground), bolted to ladder, rest on board that protects new roofing. Other ladder (background) has hooks plus platform for tools.

Copyrighted material

laid new strip asphalt shingles over them. The ridges were finished with curved ridge roll. This comes in 16″ lengths and should be nailed down with 13″ exposed.

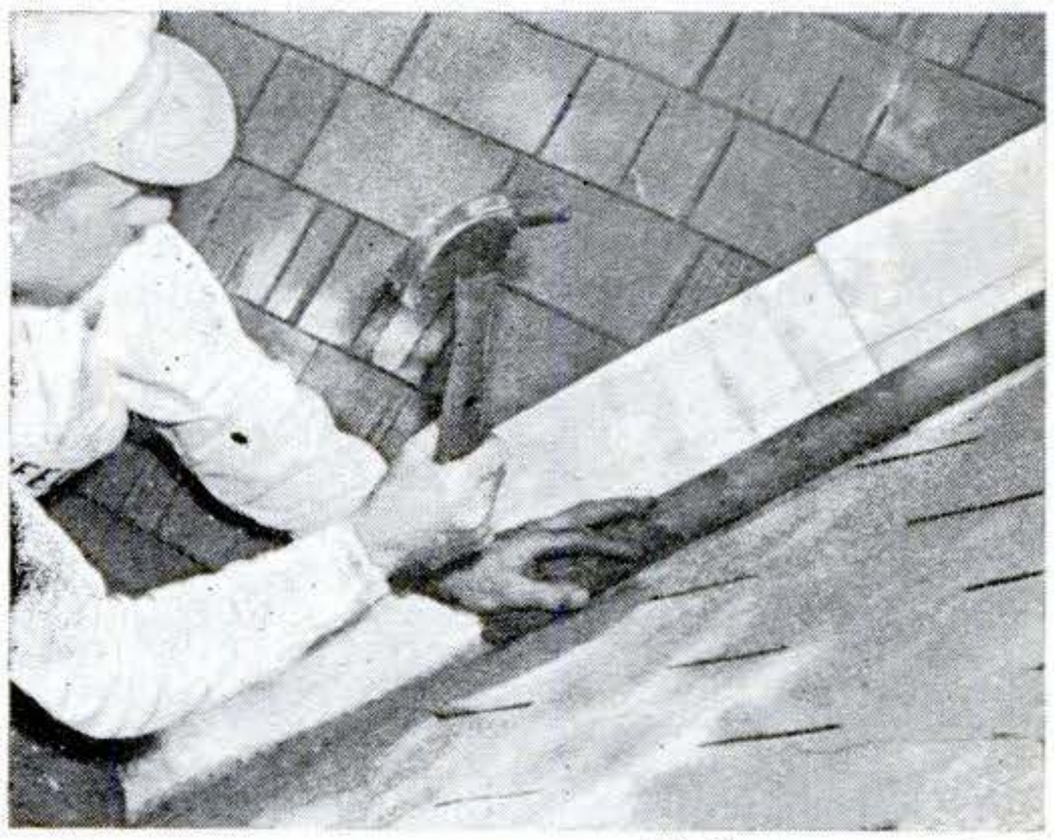
My roofing project may not have been done exactly as a professional roofer would do it, but the finished job looks neat and keeps the rain out.

One caution: roofs are easy to fall off of. Use the ladder setups shown and you'll keep both you and your tools in place.—*Emery G. Gregory, Reedsburg, Wis.*

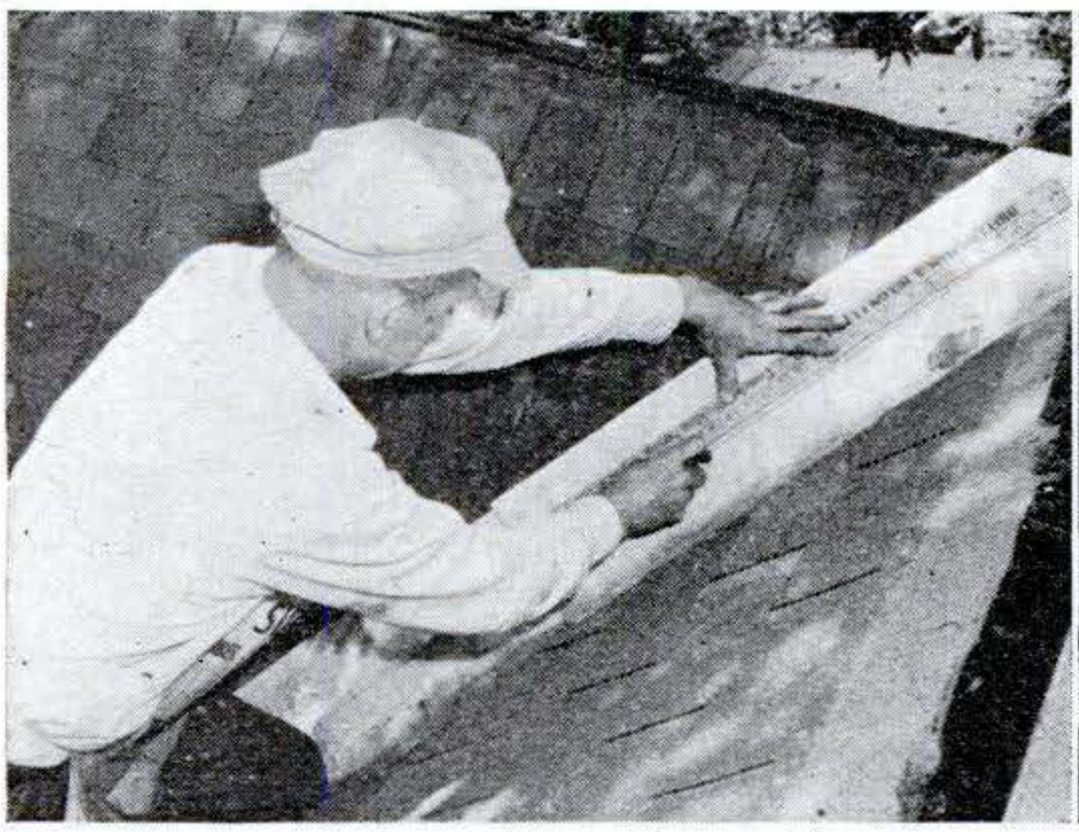


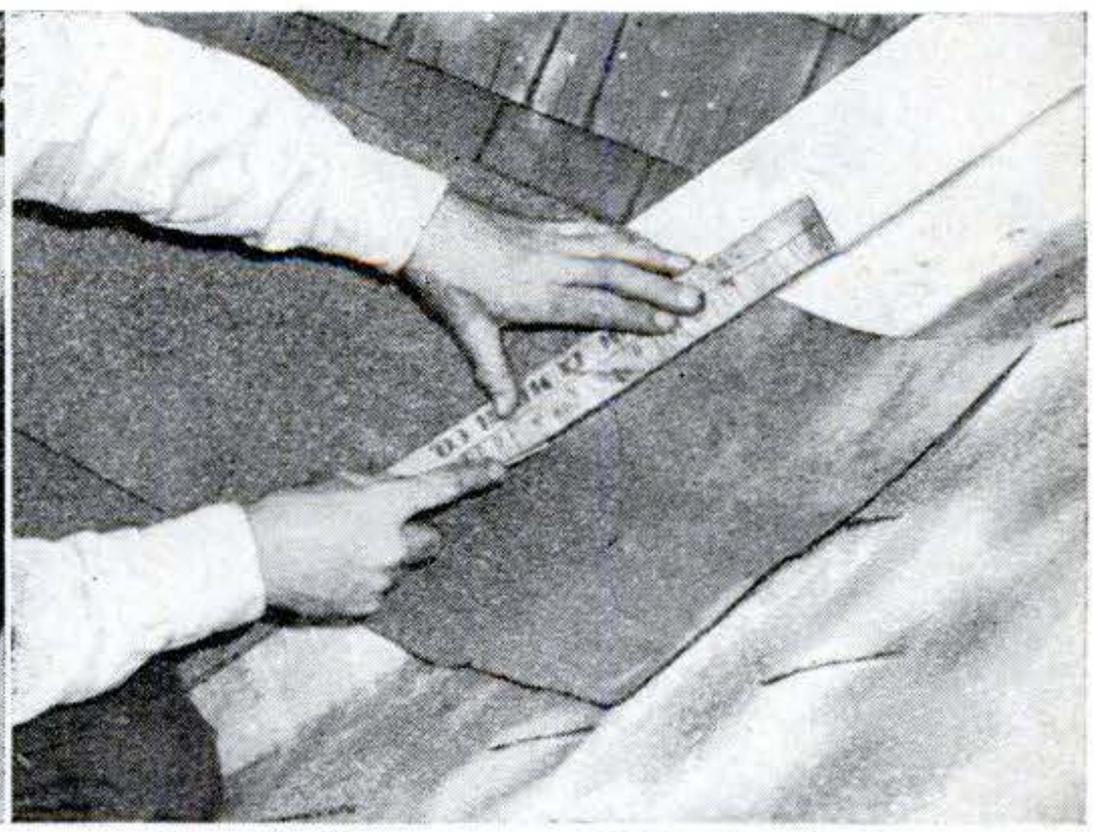
PREPARING OLD ROOF. **Nail down curled shingles. Where parts of old shingles are missing, fill in with pieces cut from asphalt shingles. If old roof is very uneven, a level base (right) for new shingles can be made by folding strips of roofing paper or heavy kraft paper.**

FLASHING. **Strips of metal for the valleys can be partially shaped by forcing them down over ridge of roof. Metals commonly used are copper, galvanized iron or steel, and tin. Cut flashing a little longer than valley.**



FORMING VALLEY FLASHING. **Nail upper end of flashing to roof. Form flashing to contour of valley by rolling 2″ pipe over metal, hammering pipe as you roll it. Then nail edges of flashing to the old roof.**



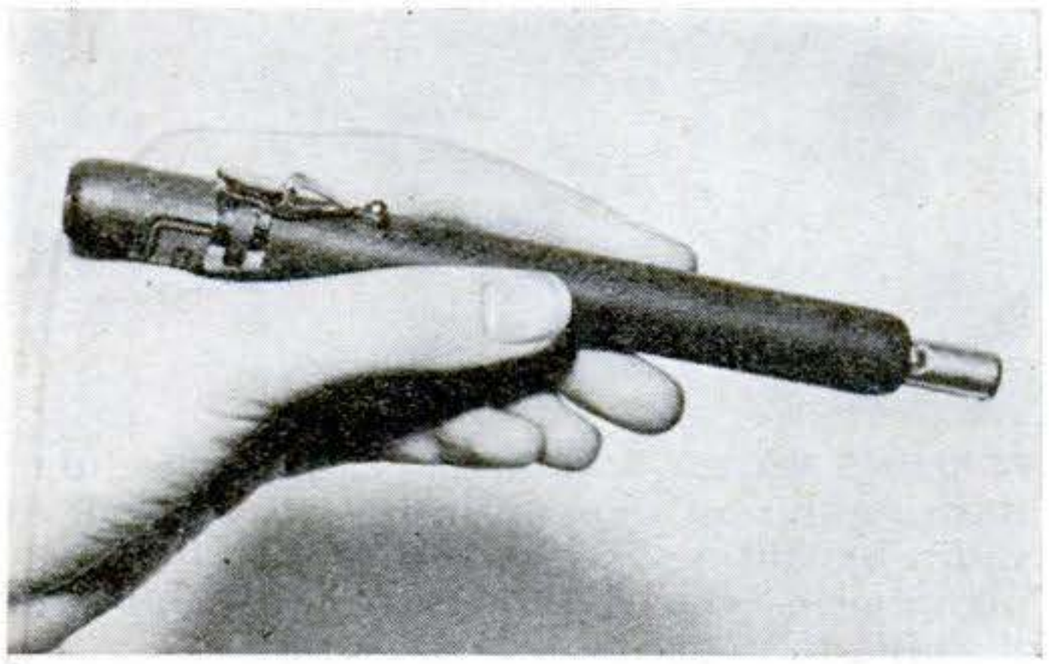


TAPERING A VALLEY. **Like a river valley, a roof valley should be wider at its foot or mouth than at the top. Lay out guide lines on flashing, allowing for a width of 4″ to 6″ at top. Increase this width 1″ every 8″ toward the mouth. Such a taper will help drainage and keep ice and snow from clogging the valley. When shingling along valleys, follow the valley guide lines, marking and cutting the roofing to match them, as shown above.**

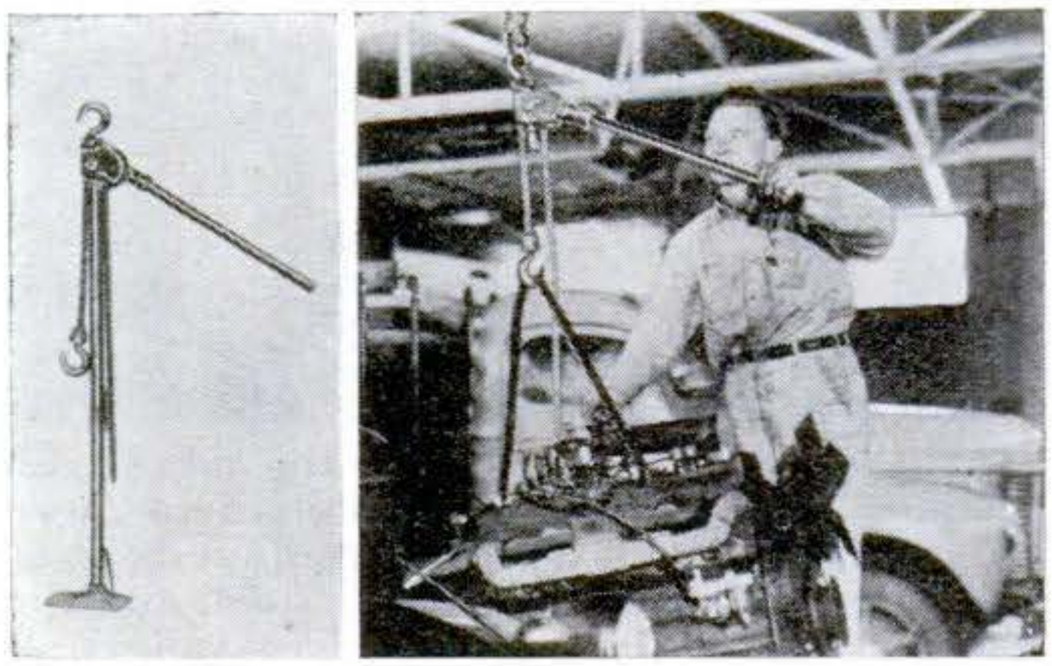
Copyrighted material

New Tools

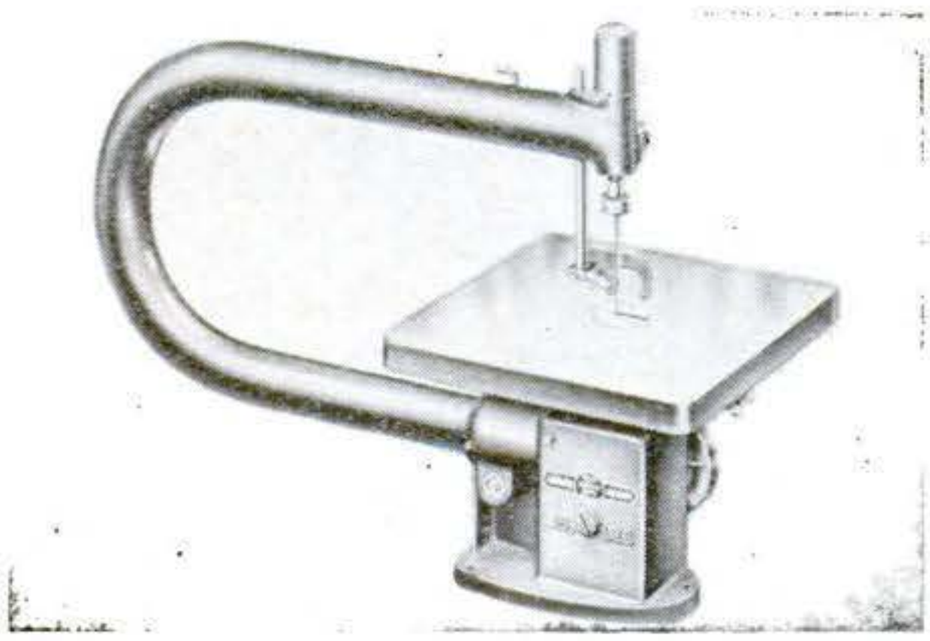
1 Sanding Disk for Circular Saw. Any table saw can be quickly converted to a disk sander by substituting this 8″ aluminum disk for the blade. Metals, plastics and glass as well as wood can be ground with the disk. Abrasive disks in five grits are available. The disk comes with coarse paper on one side and fine on the other.



2 Magnetic Probe Is Adjustable. The magnet point can be extended or retracted by turning the end knob and the strength of the magnet is controlled by the amount of extension. The tool is used to remove iron or steel particles from holes and other hard-to-reach spots.

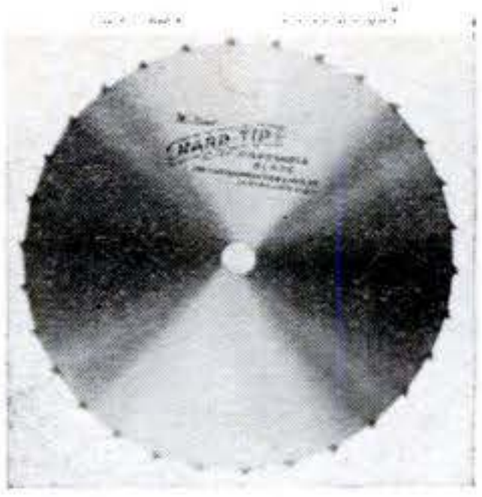


3 Hoist and Jack Combined. As a ratchet-type hoist, this tool can be used vertically for overhead lifting (right above). It can also be used horizontally for skidding heavy loads. By setting the tool on its stand, it becomes a jack with a 44″ lift. The Hoist-All is available in one- and two-ton capacities.

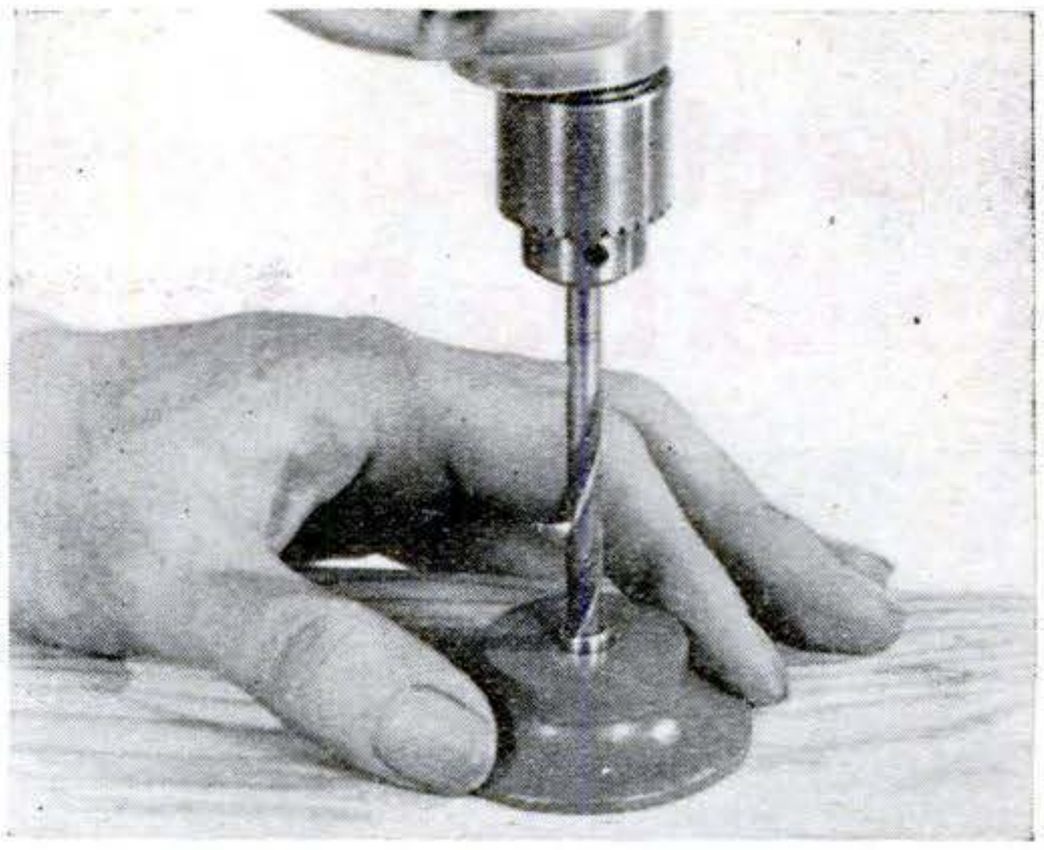


4 Jigsaw's Overarm Swings Down. For saber-cutting large boards or big plywood panels, the overarm of this jigsaw can be quickly swung down below the table. The chuck holds all blades and sabers up to 5/16″ wide and files and accessories up to ¼″-diameter shank. To cut from the side, no indexing is necessary. The blade is inserted in the chuck's 90° slot. Specifications include an 11″ by 11″ table, 18″ throat capacity, 2″ maximum depth of cut, and 1,080 strokes per minute with a 2½″ motor pulley on a 1,725-r.p.m. motor.

Copyrighted material

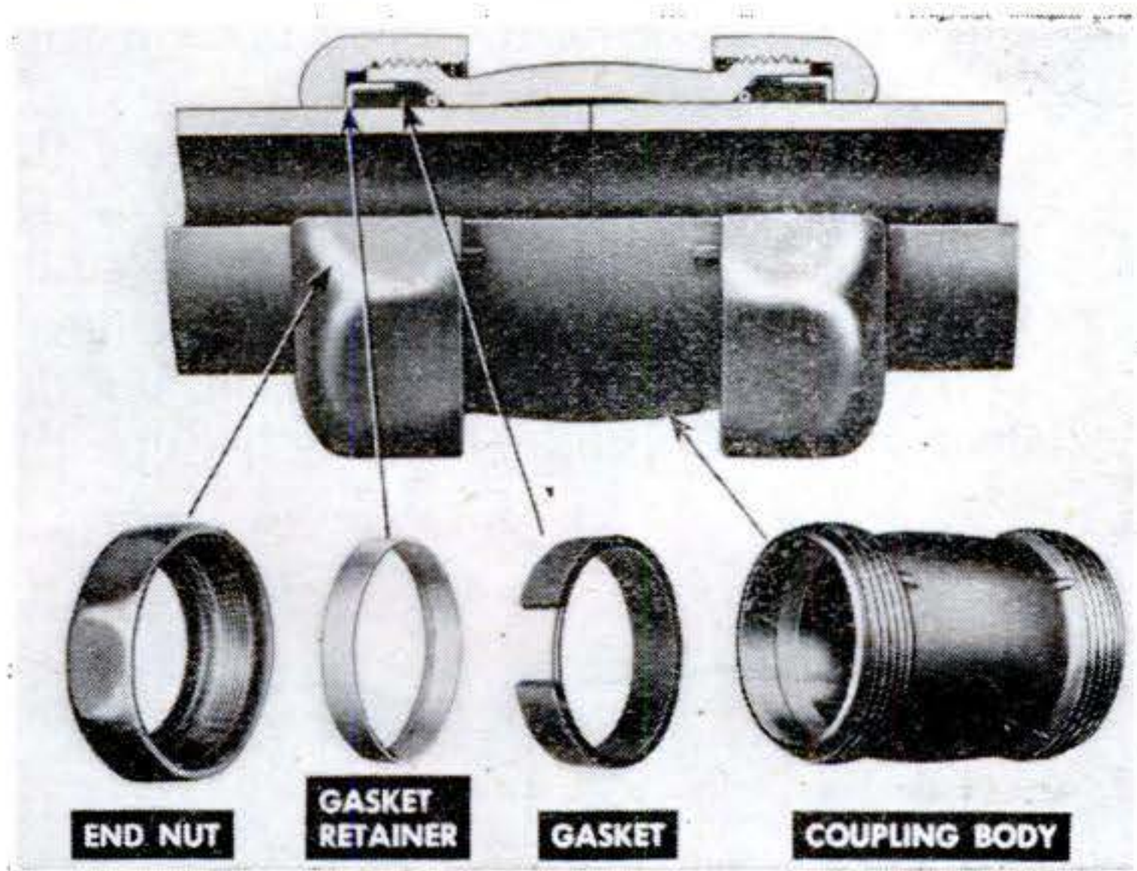


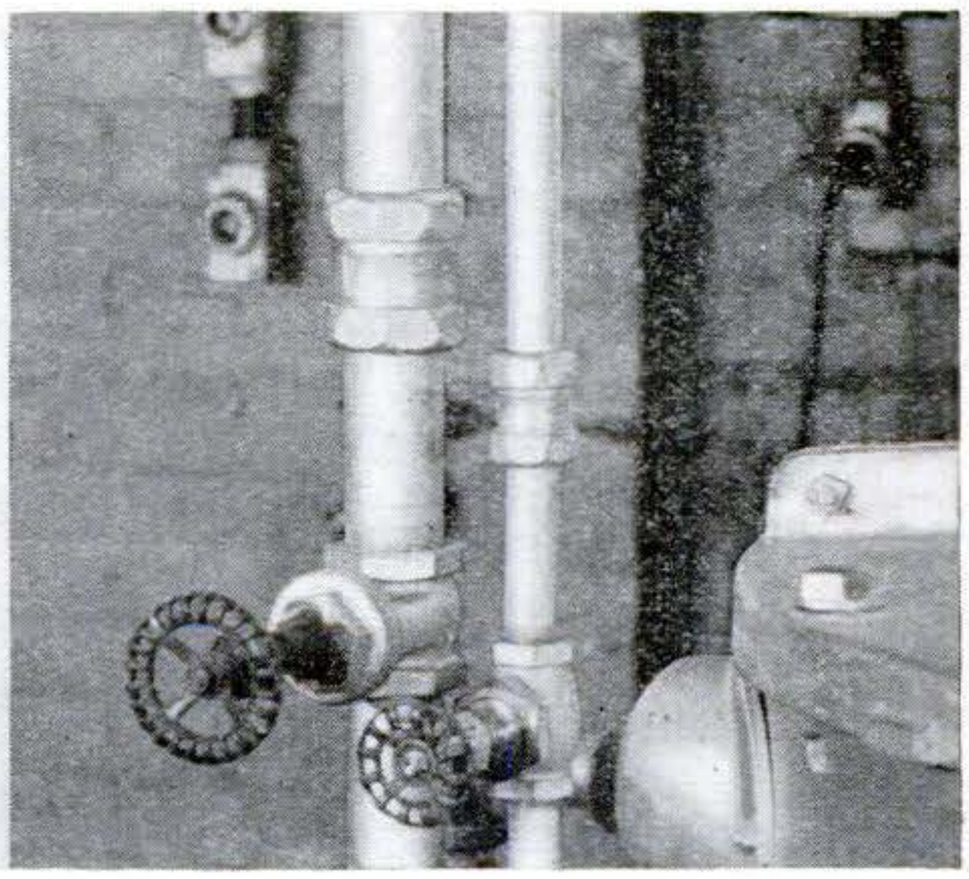
5 Disposable Blade. Like a razor blade, a new type of saw blade is priced so that it can be thrown away when it is dull. Yet the maker says it will stay sharp four to six times longer than a conventional blade. Its short teeth are said to cut faster and smoother and require less power than ordinary blades. Two types are made—one for ripping and crosscutting and the other with more teeth for working plywood and for fine crosscutting. For instance, the 7″ ripping blade has 26 teeth while the 7″ fine crosscut blade has 44 teeth. Both types fit table and portable saws. Prices range from $1.77 for a 6″ ripping blade to $8.45 for a 16″ blade for plywood and fine crosscutting.



6 Aligns Portable Electric Drill. Held or clamped in place, the tool above holds a drill at exactly 90° to the work. It comes with five hardened-steel drill bushings for ⅛″, 5/32″, 3/16″, 7/32″ and ¼″ drills. It is priced at $2.95.

7 Solid Lubricant for Machining. This stick-type wax lubricant for cutting tools is said to reduce friction, preserve tool temper and prolong the life of the tool. It comes in a cardboard dispenser 2″ in diameter by 11″ long and is applied either to the tool or to the surface to be machined. Besides machine tools, the lubricant eases driving of wood screws. When used on paper or fabric drills, it prevents burning of the work.



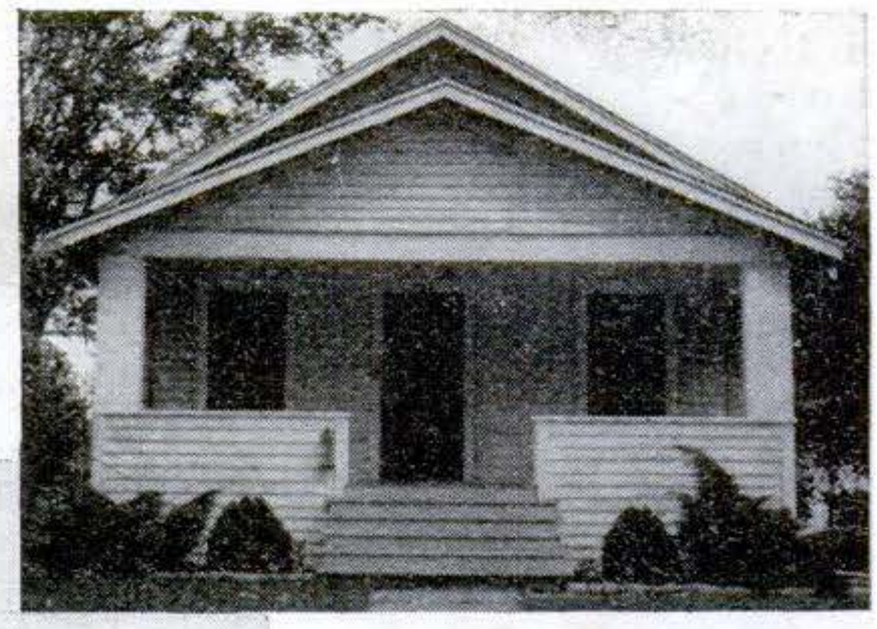


8 Pipes Joined Without Threading. It's not necessary to thread or flare pipe ends to join them with these compression fittings. The pipe ends are placed in the fittings and the end nuts tightened. When screwed up on the fitting, the end nuts compress two rubber-compound gaskets that tightly seal the connection. The fittings come as regular couplings, tees, elbows, crosses and adapters for pipe sizes up to 2″. For sizes up to 158″, bolted couplings are available. They adapt to both gas and liquid lines.

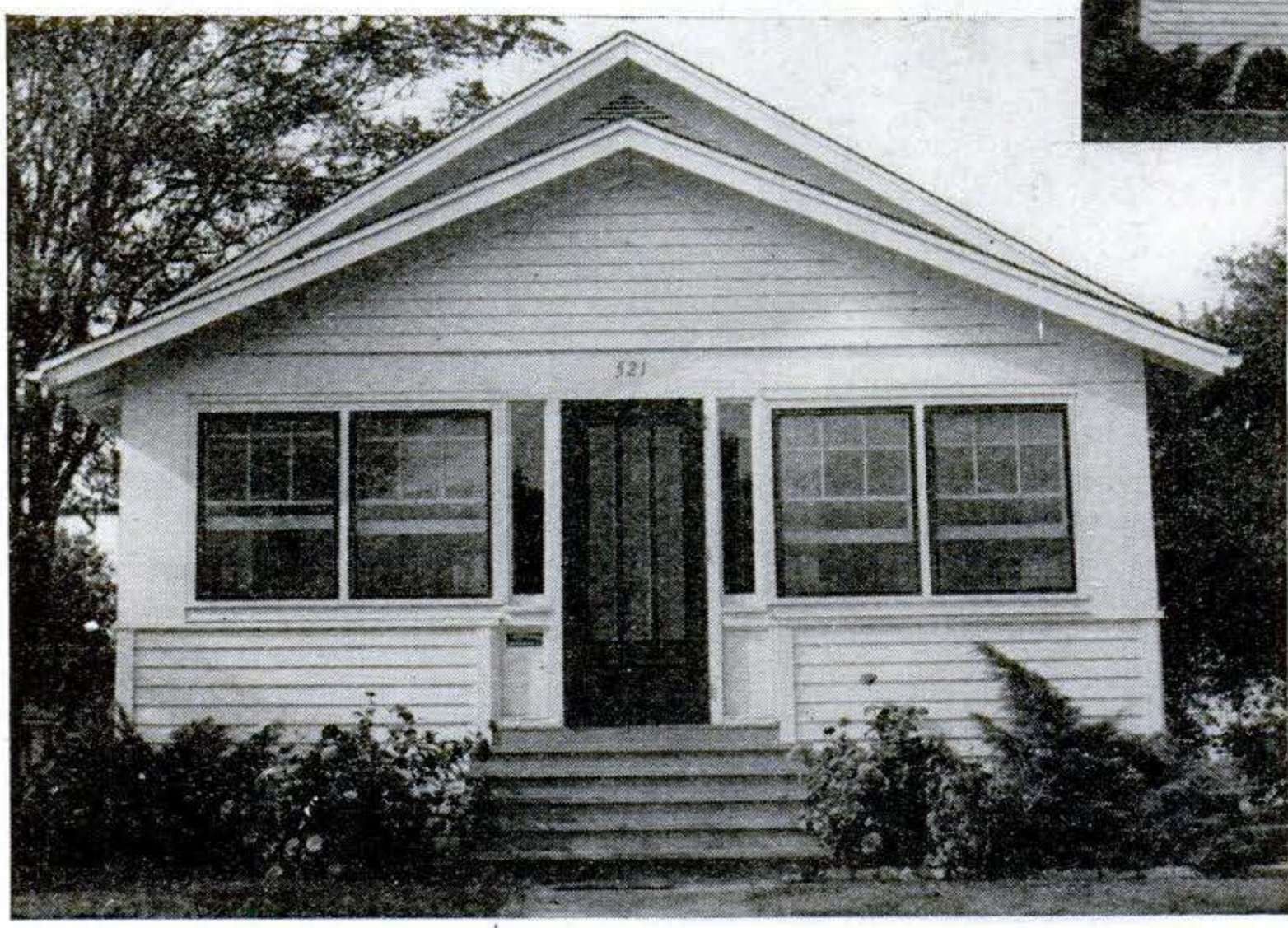
Further information on these tools may be obtained from: 1. Jaxon Co., Box 142, Gasport, N. Y.; 2. General Scientific Equipment Co., 2700 W. Huntingdon St., Philadelphia; 3. Coffing Hoist Co., Danville, Ill.; 4. Atlas Press Co., 2542 N. Pitcher St., Kalamazoo, Mich.; 5. Heinemann Saw & Mfg. Co., Canton 6, Ohio; 6. J. E. Dunning Co., 14547 S. Madison Ave., Cleveland; 7. The DoAll Co., Des Plaines, Ill.; 8. Dresser Mfg. Division, Bradford, Pa.

Copyrighted material

Porch Converted to Extra Room



BEFORE. Porch was just wasted space except during warm weather. Even then mosquitoes often made it their happy hunting ground.



AFTER. Enclosed porch now is another room. Screens keep out bugs, and the many windows let in warm sunlight on cool days.

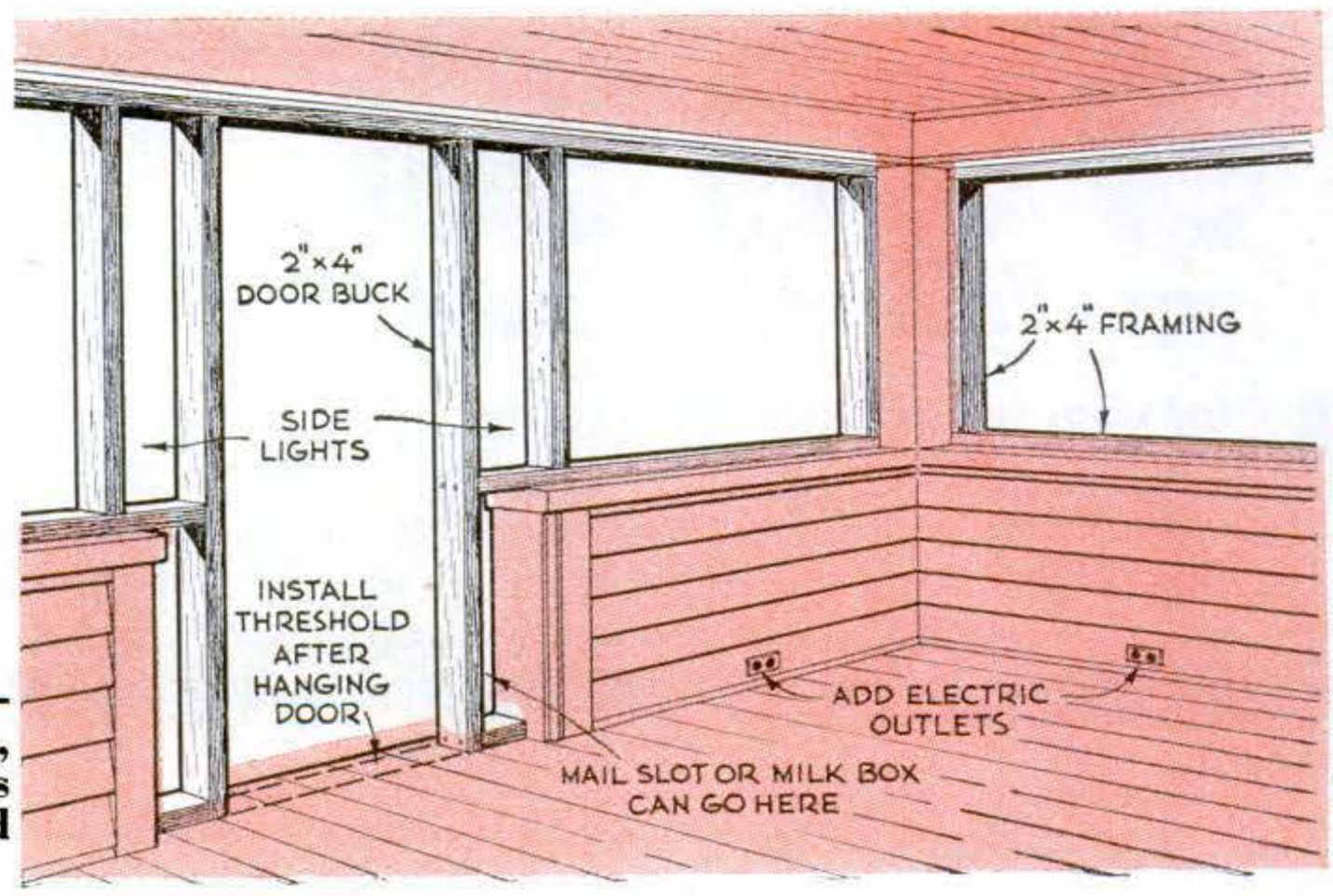
Extra year-round floor space is the reward you can win. And with a porch like the one shown here, it's neither hard nor costly to do it yourself.

I TURNED our front porch into a sun parlor, giving us an extra room. In hot weather it still serves as a porch, but a better one, since the windows are screened.

How easily you can duplicate this depends on the way your porch is constructed. If it's the strong, solid type like mine, the job is a simple one of framing in the windows and a door. If it's the less sturdy kind, with light railings, infrequent pier supports, and no ceiling, it will take a little more work. But if you'll settle for something that needn't be insulated or heated, you can convert either type of porch with little trouble.

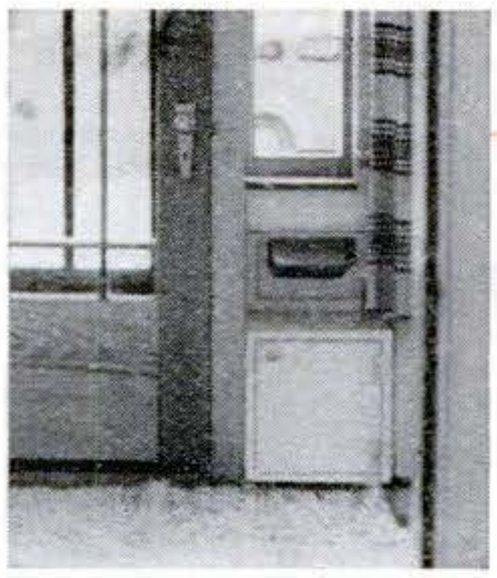
Foundation. It is important to have good underpinnings, since you're going to increase the load on them. My porch luckily had footings and concrete blocks all around. Where piers are the only support, you may want to add new ones or fill in between them with blocks.

Closing it in. I started by locating the new front door, a standard 1¾″ by 3′ by 6′ 8″ size. Then the door buck was nailed in. When I hung the door, I placed the hinges so the door was a nice fit at the sill. But the door wouldn't open all the way because the



FRAMING is simple. If ready-made windows don't fit exactly, add filler strips. Drainage slots in walls, if any, can be closed with new strips of siding.

Copyrighted material



MAIL AND MILK are now delivered inside the house. Mail slot is above milk box. Outside door of box is kept closed by spring.

porch floor sloped for drainage. So I had to rehang the door to clear the slope.

Installing windows. Ready-made units, with sash and frame assembled, make this job a cinch. First the rough framing members were nailed in place and the inside measurements of the openings taken. At the lumberyard, I bought the preassembled window units in the size that was the closest match to the framing openings.

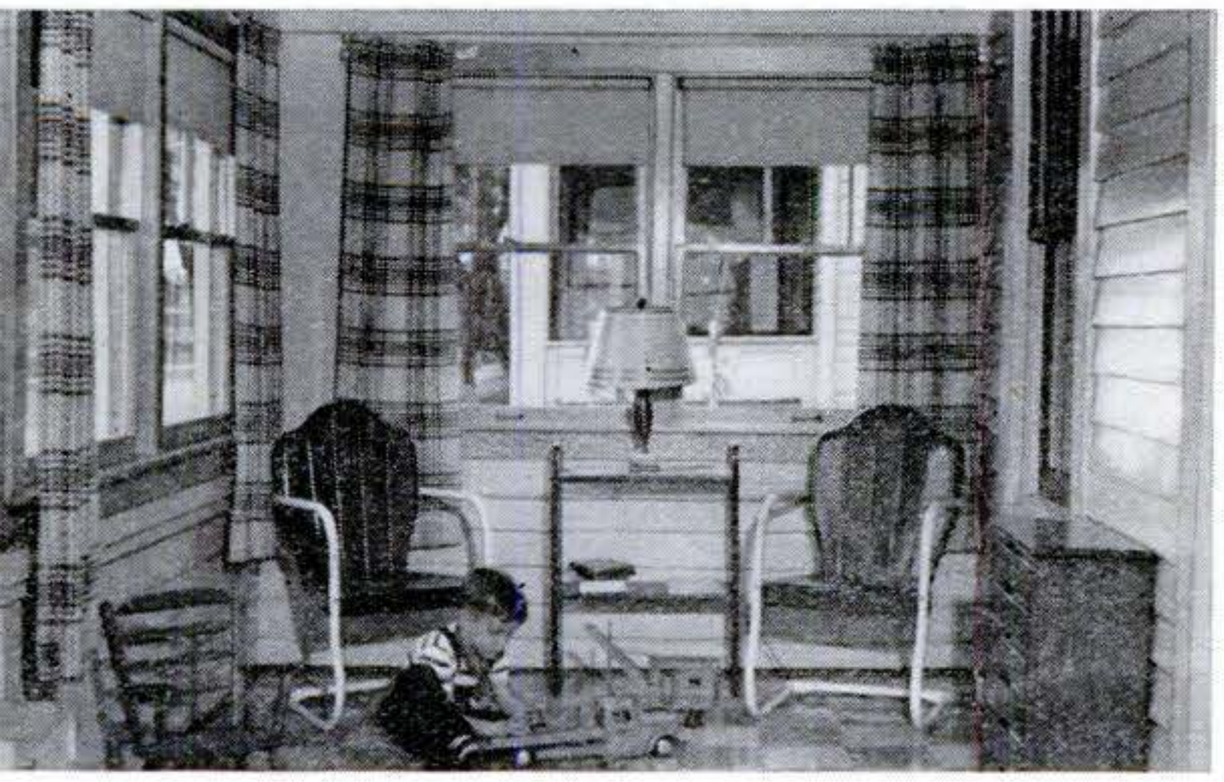
If your railings are too light to support the windows, you can beef them up with extra studs or remove them and start the new framing from the floor.

Before finishing the interior, plan where the electric outlets will come. Depending on construction, it may be more convenient to drop BX cable down inside the wall from the attic, bring it through the house wall, or run it under the floor.

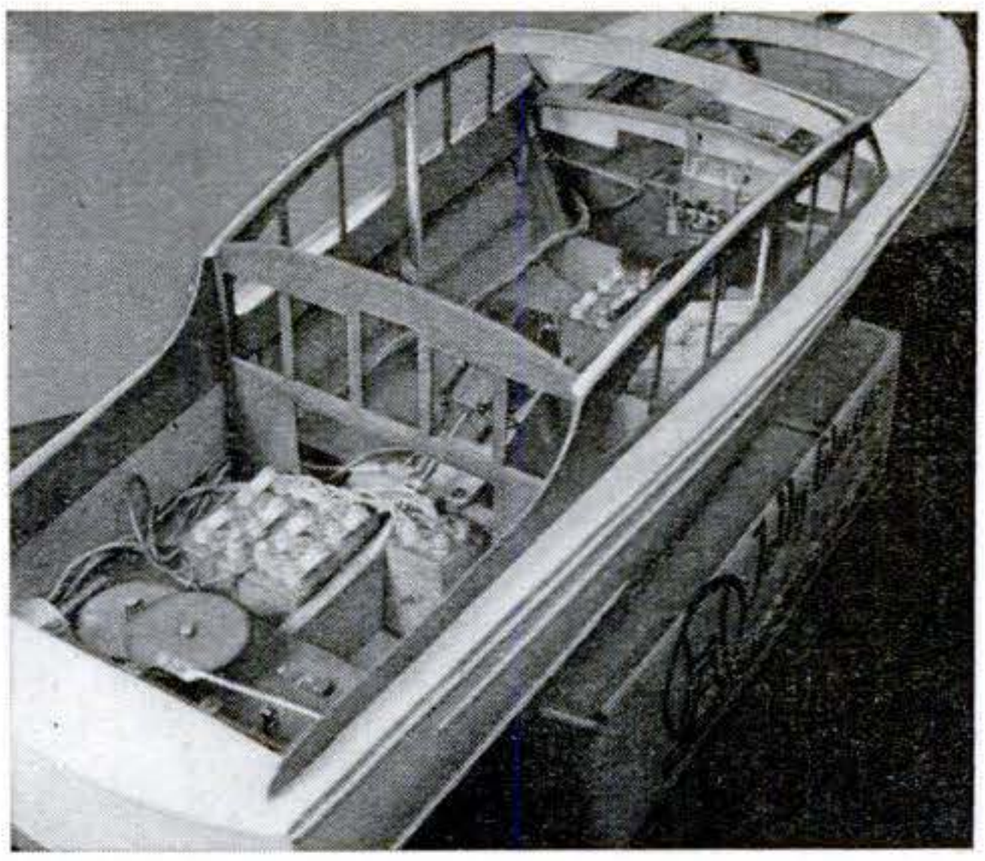
Insulation. For year-round living, your porch would have to be insulated and fitted with storm windows. Batts or reflective insulation can be stapled between the floor and ceiling joists. Holes can be bored in the railings and fill-type insulation poured in.

Porch floors are often rough and uneven. Before laying tile or linoleum, put down a plywood or composition-board subfloor.

And one more thing: don't forget to move the doorbell to its new location.—*Harold Jackson, Kankakee, Ill.*



FINISHED PORCH is a light and airy additional room for our home. It also serves the children as a rainy-day play area.



Small Battery Packs Big Punch

MODEL builders will find many uses for this new plateless storage battery that packs high output into a small space. The battery is only a fifth the size and weight of a conventional storage battery of similar output.

One model application is shown in photo above where the batteries are being used to supply power to drive and steer a radio-controlled boat.

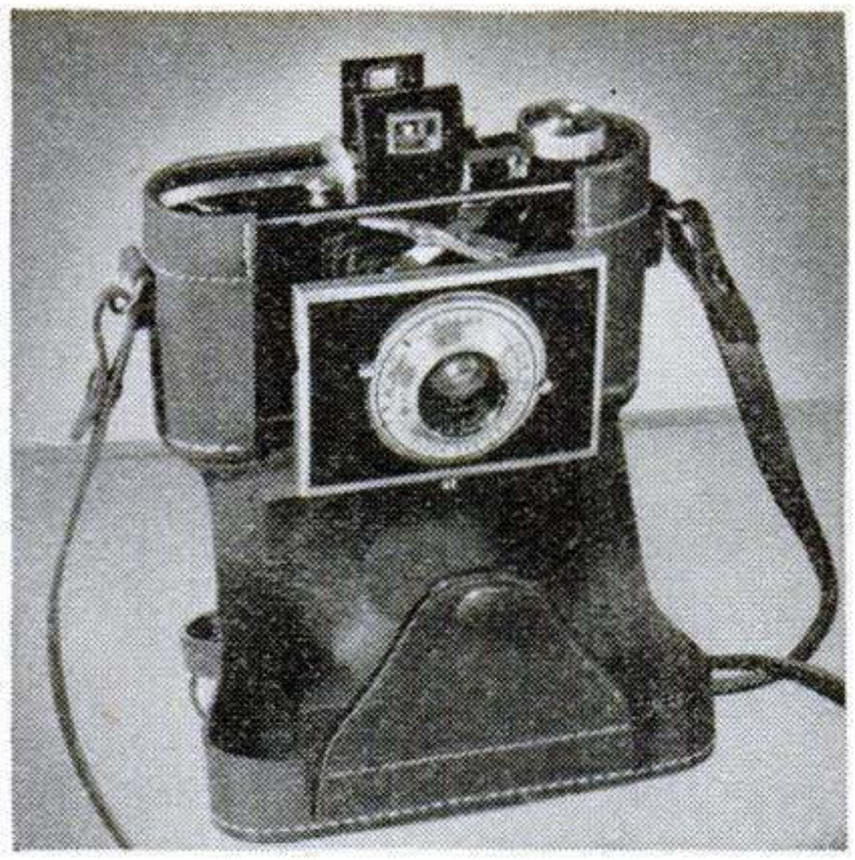
Active ingredients of the cell are silver oxide and zinc. One set of elements is enclosed in a porous sack that doesn't interfere with chemical action but does keep loose material from scaling off and causing internal shorts.

Called Silvercel, the battery is made in sizes from penlight cells up to 100-ampere-hour giants. All cells have a constant potential of 1.5 volts under load. A 20-ampere-hour size is shown below melting a tenpenny nail. *Yardney Electric Corp., 105 Chambers St., NYC.*

Copyrighted material

A Kodak Miniature Color Camera—there's one for every budget

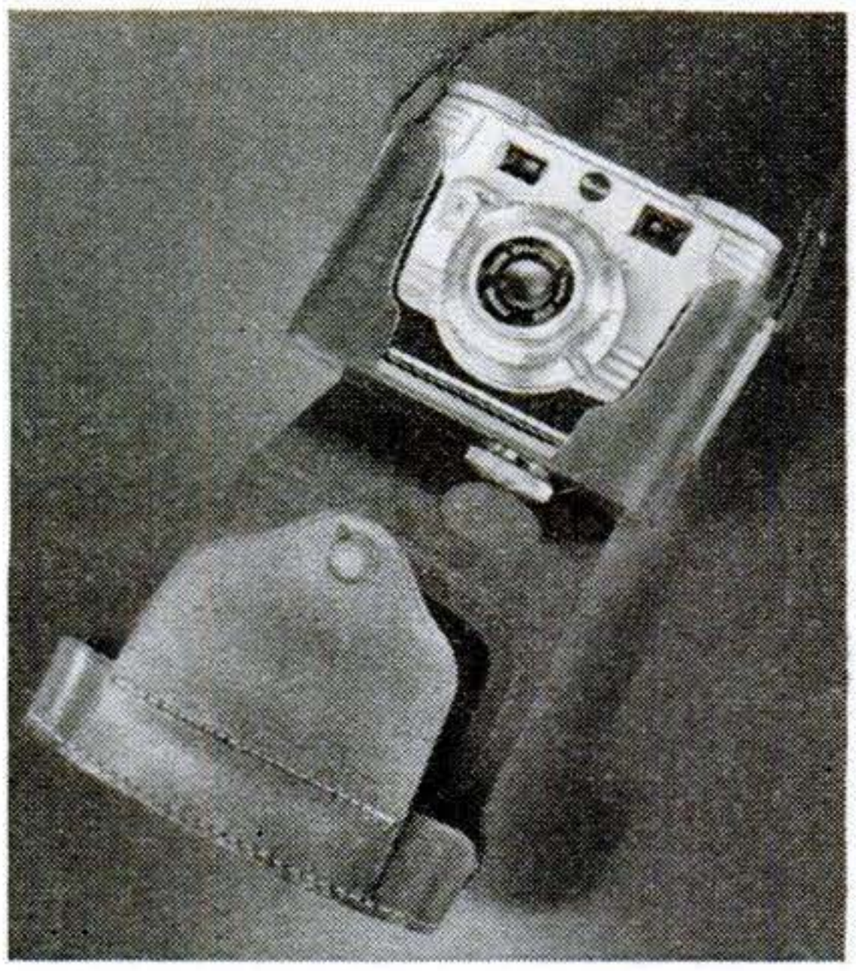
Fine, extra-thrifty "miniature"—The budget-priced Kodak Pony 828 Camera gives sharp black-and-white negatives . . . superb color slides on Kodachrome Film . . . gorgeous Kodacolor snapshots. Kodak Anaston *f*/4.5 Lens (Lumenized); Kodak Flash 200 Shutter with built-in "synch." Takes 8-exposure rolls. $31.15. Kodak Field Case, $7.00. Pony 135 Camera for 20- or 36-exposure 35mm. film, $35.75. Kodak Flasholder fits both cameras, $10.55.



Smallest of the "miniatures" . . . and one of the best—The palm-size Kodak Flash Bantam *f*/4.5 Camera takes 8 exposures on black-and-white Kodak 828 Films, Kodachrome or Kodacolor 828 Film. Lens is superbly corrected Kodak Anastar *f*/4.5 (Lumenized). Flash synchronization is built into the 1/200 shutter. Automatic film stop and body shutter release make for fast, simple operation. $56.00. Kodak Flasholder, $10.55. Kodak Field Case, $7.00.

How to make the most of Autumn's

Every golden field, every fiery maple cries out to be "snapped" in color. So be sure to take along your camera—and plenty of color film—on Fall outings. You'll see great picture possibilities at every bend in the road.

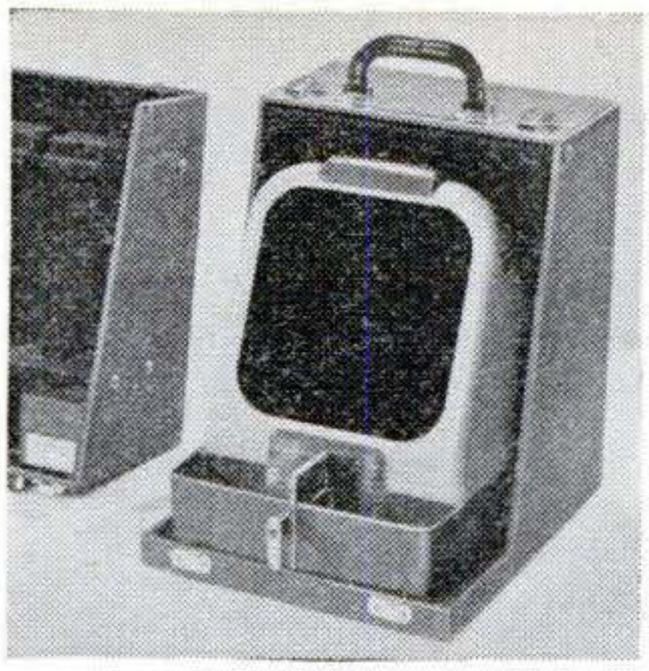


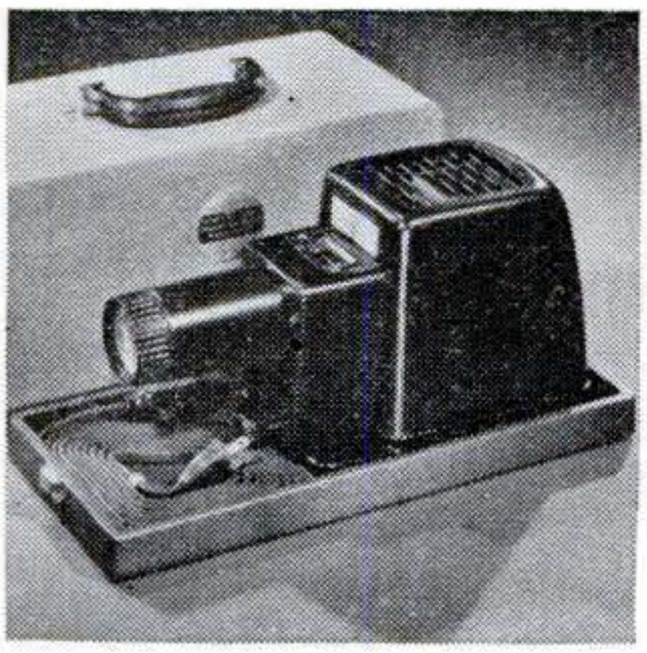
Precision range-finder "miniature"—The Kodak Signet 35 Camera, with world-famous Ektar Lens (*f*/3.5), produces sharp, brilliant color slides for projection or full-color prints with 20- or 36-exposure Kodachrome 135 Film; also clear black-and-white pictures with Kodak 135 Films. Has feather-touch shutter release bar, shutter with speeds up to 1/300, built-in flash synchronization. $92.50. Flasholder, $10.55. Kodak Field Case, $8.50.

Ultra-fast "miniature" in a new model—The Kodak Retina IIa Camera now features rapid film-advance lever, built-in flash. Also has fast *f*/2.0 coated lens in a 1/500 shutter, range and view finder combined in a single window, automatic double-exposure prevention, film stop, and counter. Takes 20- or 36-exposure black-and-white Kodak 135 Films or Kodachrome 135 Film. $164.10. Flasholder, $10.55. Kodak Field Case, $10.50.

Copyrighted material

A projector or viewer—to show your color slides at their brilliant best



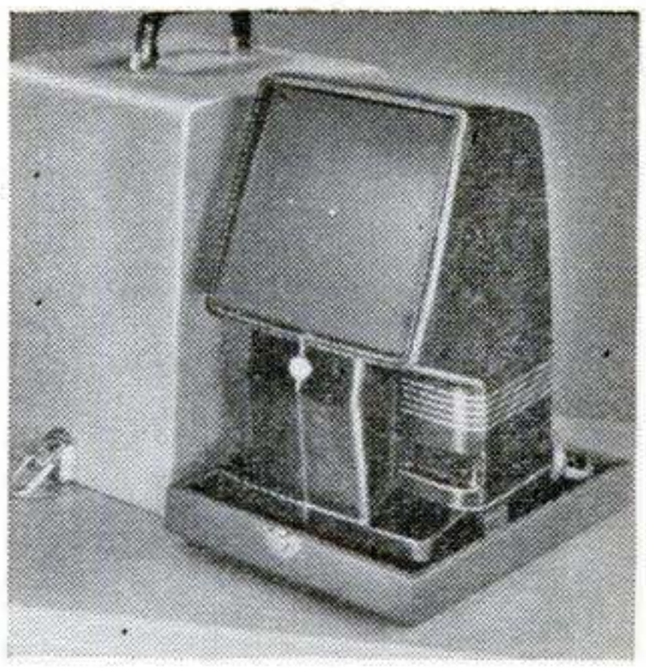


Kodaslide Table Viewer, Model A—Projector, screen, slide changer in one compact unit. Projects brilliant images even in a lighted room. Takes 75 cardboard or 30 double glass slides. $97.50. Carrying case, $27.50.

Kodaslide Table Viewer, 4X—Enlarges slides over four times on built-in screen. No fuss, no bother. Just snap it on and enjoy your handiwork. $49.50. Carrying case, $15.50.

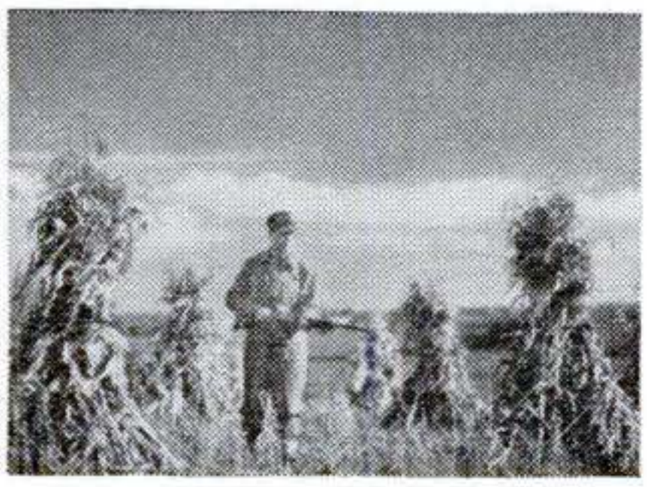
Kodaslide Merit Projector—Budget-priced instrument for brilliant screenings. New jar-proof slide feeding; Kodak Projection Ektanon Lens, 5-inch *f*/3.5 (Lumenized); built-in elevation device; cool operation. $26.10. Carrying case, $9.50.

Kodaslide Projector, Master Model—Fast lenses and 1000-watt lamp can deliver more light to screen than any other 2x2-inch slide projector. Turbine-type fan cools both sides of slide. Choice of 4 projection lenses. From $169.00. Carrying case, $50.00.



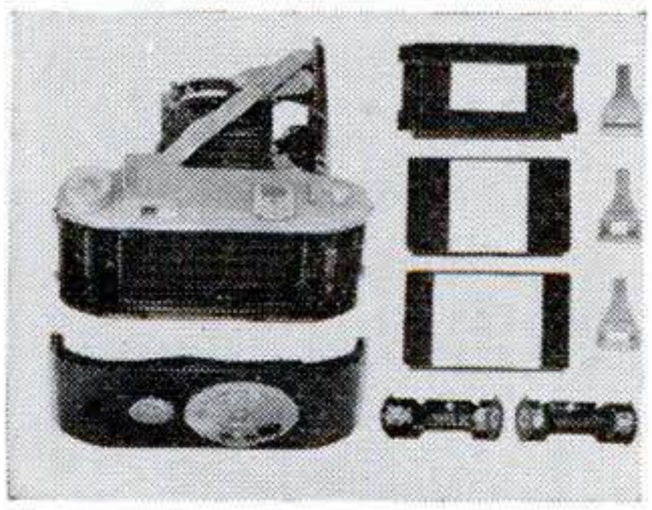
color-picture opportunities

Some suggestions for the perfectionist

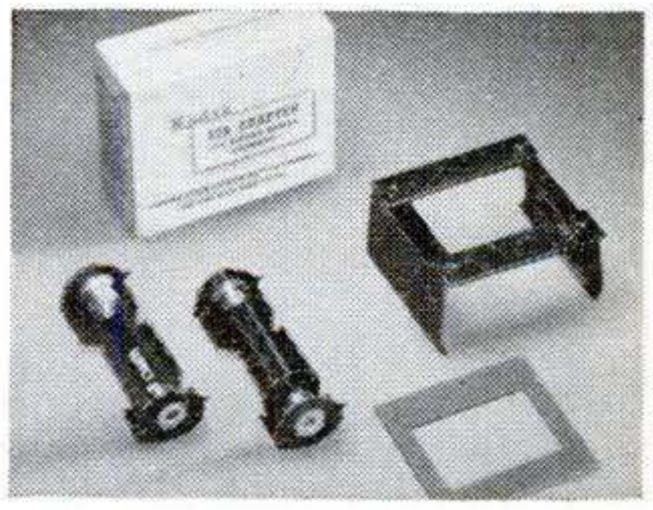


If you want your subject to stand out sharply against a dark blue sky in color pictures, use a Kodak Pola-Screen. From $6.75. Kodak Pola-Screen Viewer for previewing effect, $6.75.

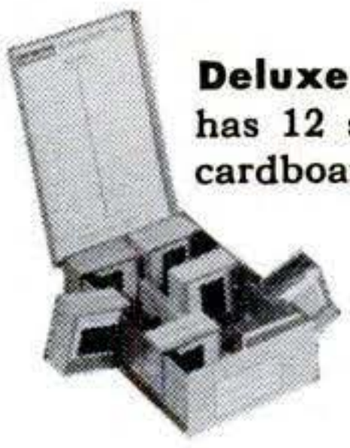
Kodak Skylight Filter—"Warms up" many color pictures. $1.65 up. To cut bluishness in flash pictures with Kodachrome Film, Type A, try *Kodak Light Balancing Filter 81C*. From $2.07.



Inexpensive kits adapt Kodak Tourist and Reflex Cameras for Kodachrome Film—Kodak Tourist Adapter Kit for deluxe model "Tourists," $13.25 (*left*), and the Kodak 828 Adapter for Kodak Reflex Cameras, $4.59 (*right*), permit picture-taking in full color on Kodachrome or Kodacolor 828 Film.



Kodak Auto-Release—Trips shutter, gets the photographer into the picture. $3.86.



Deluxe file—Kodaslide Compartment File has 12 swing-out compartments for 240 cardboard or 96 glass slides. $3.94.

Protects valuable slides—Inexpensive metal Kodaslide File Box holds 150 cardboard or 53 glass slides. $1.57.

See your Kodak dealer for all your photo needs.
He'll be happy to "talk shop" anytime you drop in.

Prices subject to change without notice and include Federal Tax where applicable.

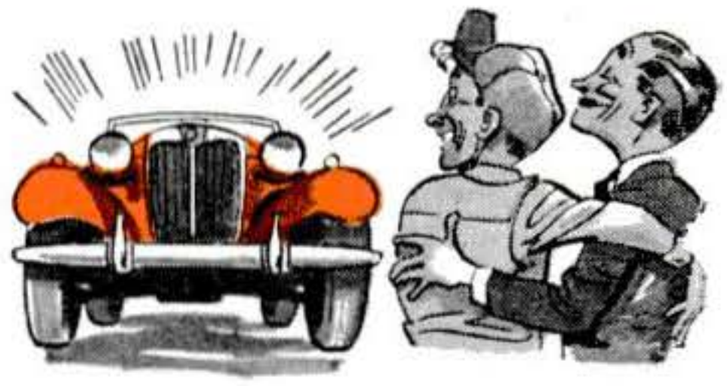
EASTMAN KODAK COMPANY, ROCHESTER 4, N.Y.

Kodak
TRADE-MARK

[*Continued from page 157*]

would have bogged down. But not the MG. It will go anywhere, roads or no roads.

Evidently that's one of the things that warms the hearts of owners, including those in the MG Car Club. Yes, that's the nub of the cult. Of the 17,000-odd MGs roaming the U.S. highways today, 1,400 have owners belonging to the Car Club.



More are joining every day. The 600 MG dealers in this country encourage it.

The dealer-owner relationship is one for the book. Damon and Pythias couldn't be closer despite the fact that service on MGs —members of the cult tell me—hasn't been good. It's getting better, but it has some distance to go. Parts are hard to get.

Close to the water, the sand on the beach was fairly hard-packed, and I tried out the acceleration.

There's 30 miles an hour on the stop watch in six seconds . . . now, again, . . . there's 30 in 5.9 seconds . . . now . . . there's 50 in 14.7 seconds . . .

Like any long-stroke engine, the MG's has a high "thermal efficiency"—it takes full advantage of the fuel used but pays a penalty in a lower mechanical efficiency.

I think I can beat the manufacturer's specification to 60 miles an hour . . . off we go . . . 25 . . . 35 . . . 45 . . . and 60 in exactly 18.7 seconds.

That was almost six seconds better than the book said. The speedometer calibrated out just over 56 miles an hour at an indicated 60.

Stops Fast, Too

As we started for home, I picked a deserted stretch of pavement near the beach, rolled the MG to an indicated 60, and jammed on the brakes. The result was surprisingly good—the car stopped dead in 132 feet.

Out on the highway, I again lost my wife, who had commandeered an unwilling Bill for the return trip. The MG felt rubbery. All sports cars do, compared to racing cars. They contain a lot of rubber insulation. If they didn't, they'd beat you to death with their hard springing. The springing is hard, of course, so that they will take the turns rigidly in road racing.

As I parked in front of the house, Pem Cornelius of Indianapolis, an old friend, came sauntering out.

It had begun to sprinkle, and I started wrestling with the top and side curtains.

"I wonder," remarked Pem, giving me a hand on the top, "whether I could get into this thing."

"You're not figuring on buying one!"

He rubbed his chin. "I might," he mused, "it's quite a car."

I don't know. I guess that you don't explain cults. You just accept them. It could be great fun. END

FACTS ON '52 MG

Model: Midget series TD two-passenger convertible.

Engine: 4-cyl. valve-in-head; 54.4 hp. at 5,200 r.p.m.; bore and stroke, 2 39/64" by 3 35/64"; compression ratio, 7.25:1; piston displacement, 76.28 cu. in.; piston travel (in feet per car mile at 20 m.p.h.), 2,458; crankshaft bearing surface, 23.31 sq. in.; torque, 63.9 lb.-ft. at 2,600 r.p.m.

Weight: 1,904 lb. (without load); per hp., 35 lb.

Transmission: four-speed manual shift; rear-axle ratio, 5.125:1.

Steering ratio: 13.75:1; radius of turning circle, 15' 7½".

Effective brake-lining area: 105 sq. in.

Springs: front, coil; rear, semi-elliptic.

Outside dimensions: height (no load), 53" to top of windshield; over-all length with bumpers and guards, 145"; width, 58⅝"; wheelbase, 94"; overhang, front 20", rear 34"; tread, front 47⅜", rear 50".

Inside dimensions: seat-cushion widths, 17½" each, divided seat; leg room, 48½"; headroom with top up, 36"; seat height, 8"; vertical distance, steering wheel to seat cushion with seat in mid-position, 6⅞"; seat adjustment, horizontal 4¼", vertical none.

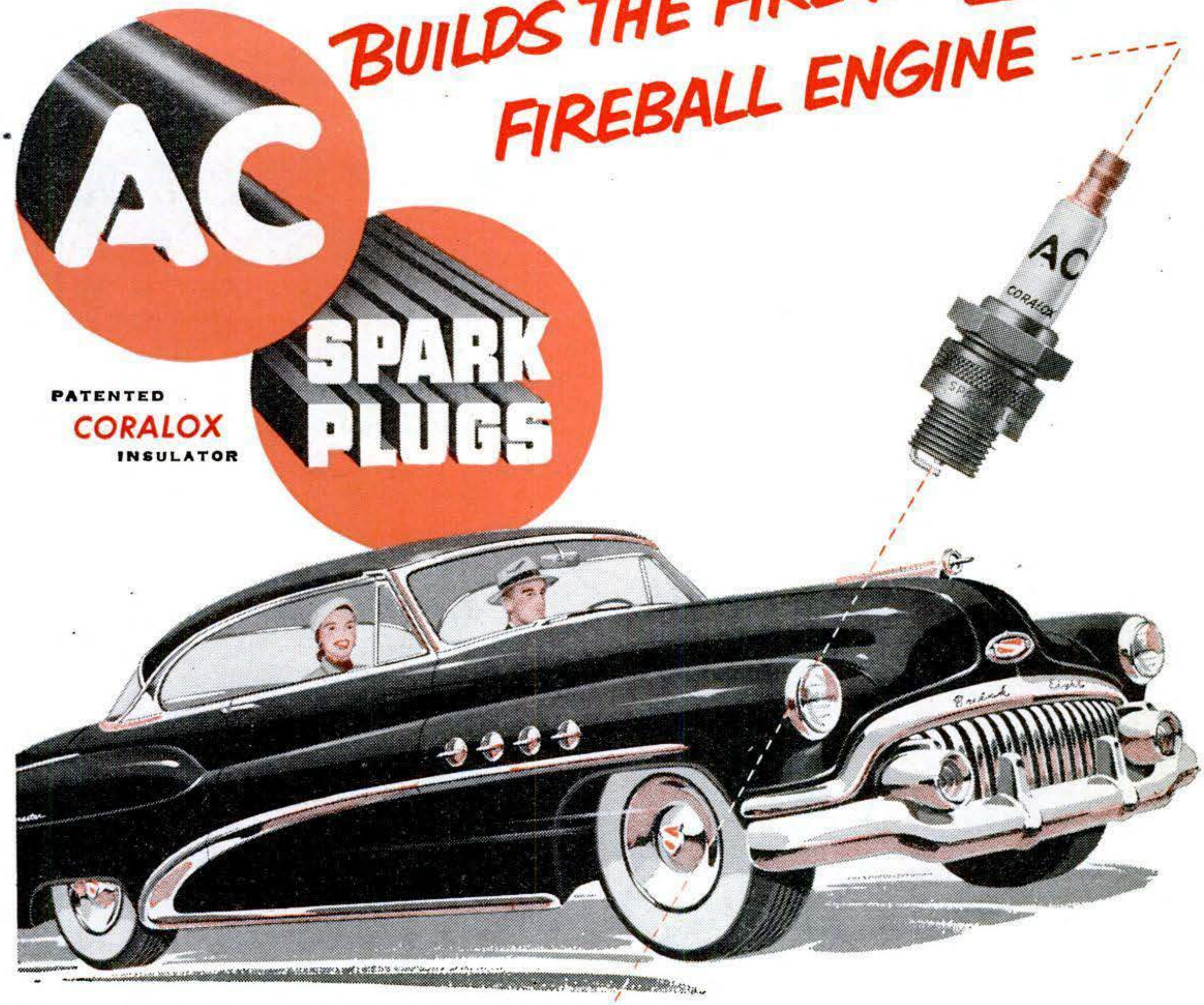
Tire size: 5.50 by 15.

Copyrighted material

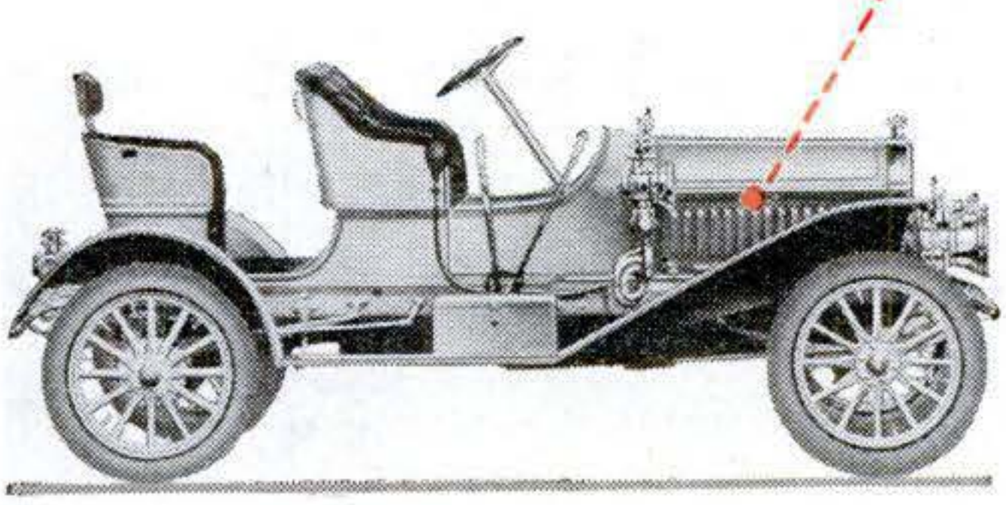
BUILDS THE FIRE IN BUICK'S FIREBALL ENGINE

AC SPARK PLUGS

PATENTED
CORALOX
INSULATOR



... AND USED ON EVERY NEW BUICK SINCE 1908



The latest thing in 1908, this model "S" Buick had a 4-cylinder, 29-horsepower engine--wood spoke wheels with 32" x 4" tires--three oil lamps, gas headlights, horn and repair outfit as standard equipment. The top and double rumble seat were extra.

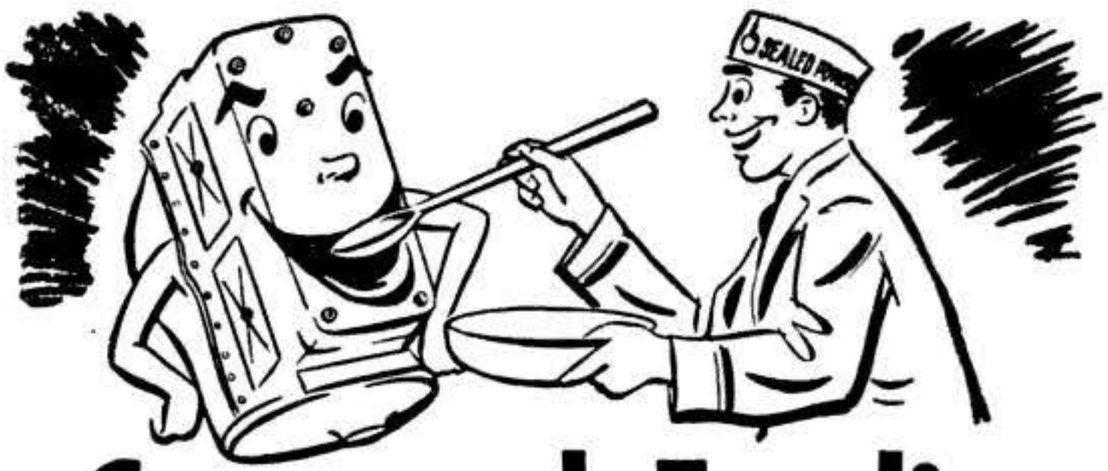
Buick engineers specified AC Spark Plugs as factory equipment 'way back in 1908--have continued to do so for 44 years.

ACs with patented *CORALOX* Insulator are a "natural" for Buick's famous high-compression, high-powered Fireball engine. *CORALOX* provides better electrical insulation--greater resistance to fouling--surer firing at every engine speed and temperature.

You can get these *CORALOX* advantages for your car, too, no matter what the make or model--for there's an AC type specially engineered for every type of engine.

AC SPARK PLUG DIVISION GM GENERAL MOTORS GENERAL MOTORS CORPORATION

Copyrighted material

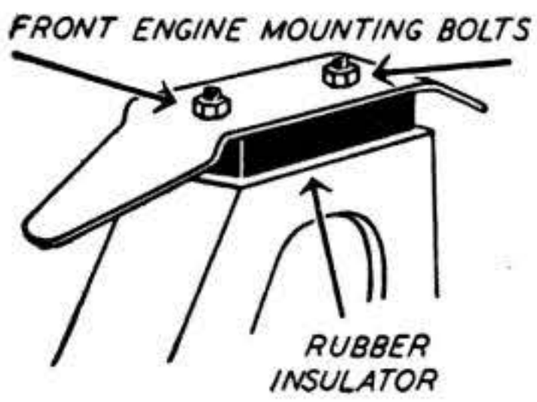


Care and Feeding of Engines

BY S. P. CORP

ALIGN THAT ENGINE

When the engine is installed in a passenger car, rubber insulators are used at each engine mounting support. Support bolts are drawn down just enough to fasten the engine securely to the frame. The rubber insulators deaden engine noises and prevent them from being transmitted up into the car.



When engines are replaced, it is important that they be properly aligned, otherwise severe engine vibration will be felt in the car.

To correct such a condition, loosen the exhaust support brackets and all engine mounting bolts. Do not remove the bolts. Start the engine and accelerate it a few times so that the engine will align itself. Then tighten engine mounting bolts and exhaust support brackets.

IT WON'T BE LONG

Before we talk to you again, there will be frost in the northern states. Between now and then, make these six checks to insure easy starting on the first cold morning:

1. Hydrometer-test your battery. If specific gravity is below 1.250, have it recharged. Be sure to see that battery cables are tight and not corroded. Clean cables are important to easy starting.

2. Check distributor cap for cracks. Clean cap and all wires; replace worn wires. Good ignition is vital to quick starting. Remove one wire from spark plug and hold 3/16" from engine block. Start engine. If spark jumps gap evenly, ignition is O.K. If erratic, check distributor points for correct spacing and replace any that are burned or pitted. See that all connections are tight.

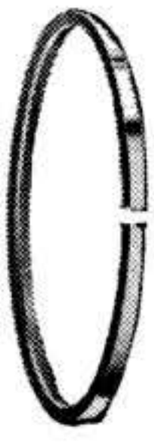
3. Remove and clean all spark plugs, replacing any with cracked porcelain. Regap to car manufacturer's specifications. Install new gaskets, tighten plugs finger-tight, then use socket wrench just enough to squeeze the gasket.

4. If starter is sluggish, check brushes and commutator. A dirty starter can make the engine start hard.

5. Use a light oil for winter driving.

6. Depress clutch pedal for cold-weather starting.

INSTALL KROMEX RING SETS



To get all the winter power you need, install Sealed Power KromeX Ring Sets, specially engineered for late-model cars and trucks. Top compression rings and steel rails of oil rings have chrome faces to fight heat, friction, corrosion, and abrasion. Write Dept. H-9, Sealed Power Corp., Muskegon, Mich., for new free booklet, "MORE POWER, Less Oil, Less Gas."

Gus Pulls a Trick Play

[*Continued from page 182*]

ing the carburetor. I'm going to take a look at the pump, in spite of its being new."

"Okay, go ahead. I only hope you have better results than those other birds!"

"It never hurts to try. I'll make it as quick as I can."

Gus disconnected the fuel pump, carried it inside and began dismantling it. Thompson followed him into the garage. Gus emptied the gas and began looking.

"At least the fuel got this far!"

The diaphragm wasn't worn. He hadn't expected it to be, but on second glance, he noticed he could scrape some sort of residue off the diaphragm surface.

Trouble Must Be in Fuel Pump

"Funny thing, but it *is* your fuel pump!"

"Oh, no!"

"Sure. See this gummy stuff on the diaphragm? And look at these springs and valves. The gum locked the valves so that the gas wouldn't pass on to the carburetor. The springs that actuate the valves haven't got the freedom they should have, and offhand I'd say it was coming from the diaphragm there. These diaphragms are coated to make them last longer, and that outer surfacing is flaking off."

"I might expect one lemon, but not three in a row!"

"Oh, it isn't that. This is a perfectly satisfactory brand."

Nothing New Has Been Added

"Well, what now?"

"We've got to find a cause. It's something the other mechanics didn't bother checking, evidently. First, we're going to look at your gas tank. Do you know if the regular driver has been using any gas-tank additives—you know, canned tune-ups, valve oils, anything like that?"

"No, I'm sure of it. Nothing but high octane."

"I see. Some of these additives are okay, and some are inclined to gum up the engines. All right, that's one possibility eliminated."

They went out and Gus opened the drain cock on the tank, letting the gas run into a couple of five-gallon cans. He watched the color down to the last drop. There was no sign of anything foreign.

"See anything? It's quarter to eleven. . ."

[*Continued on page 234*]

Copyrighted material

REMODEL IT YOURSELF ... USE THE BEST

PUT YOUR FOOT DOWN ...
INSIST ON **GOLD SEAL®**
LINOLEUM TILE!

Put down Gold Seal Linoleum Tile and know that you've got the *right* tile over your wood floor. For this is *genuine* inlaid linoleum . . . *flexible* . . . designed to take the up-and-down movement of the average wood floor without a strain. It *can't* snap, chip, or shatter!

And Gold Seal Linoleum Tile practically installs itself! These tiles are precision-cut into *true, right-angled 9"x9" squares*. They slice into odd shapes with just a knife . . . without heating, scoring, or hacksawing.

It's greaseproof to household fats and oils. Even spatters from a hot frying pan won't pit, soften, discolor, or disintegrate it.

What a floor you get! A smooth, warmly colorful floor, with all the quiet, restful resilience of the very finest custom installations . . . *at just a fraction of the cost!* Satisfaction guaranteed or your money back!

ABOVE ALL, USE **GOLD SEAL CONGOWALL®** IT'S UP FOR GOOD IN OVER 5,000,000 HOMES!

There's only one Gold Seal Congowall . . . the baked-enamel wall covering that looks, feels, and cleans like expensive ceramic tile . . . *never* needs refinishing, repairing or repainting.

Only one genuine Congowall that's so tough and sturdy . . . yet so flexible and *downright simple* to put up. Just paste it to the wall . . . that's all! Congowall's special, patented backing *locks* it to your wall . . . *keeps it there*, smooth and tight for good!

Only Gold Seal Congowall gives you a choice of 16 true tile colors, plus the new Ivy and Vine patterns. Cost? Only about 15¢ a square foot . . . including the Gold Seal *guarantee* of complete satisfaction or your money back!

FREE! Special do-it-yourself decorating booklet . . . 16 pages of full-color pictures, ideas, suggestions . . . easy-does-it hints for all rooms. Instruction booklet, too!

CONGOLEUM-NAIRN INC.

© KEARNY, N. J.

MAKERS OF GOLD SEAL GUARANTEED FLOOR AND WALL COVERINGS

MAIL COUPON TODAY

Congoleum-Nairn Inc.
Kearny 13, N. J.

Please send me FREE Decorating Booklet and Instructions.

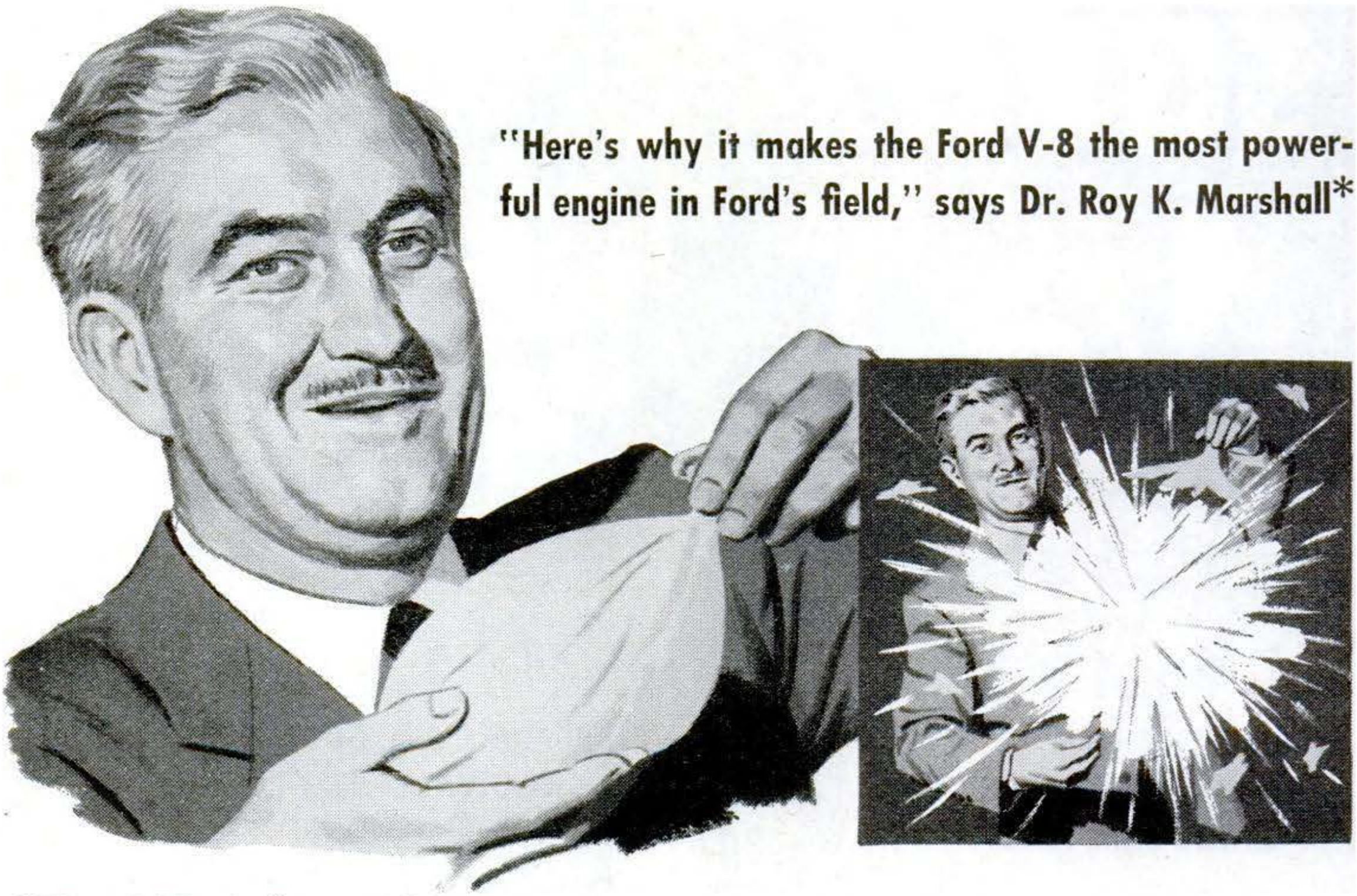
Name_____

Address_____

City_____ Zone_____ State_____

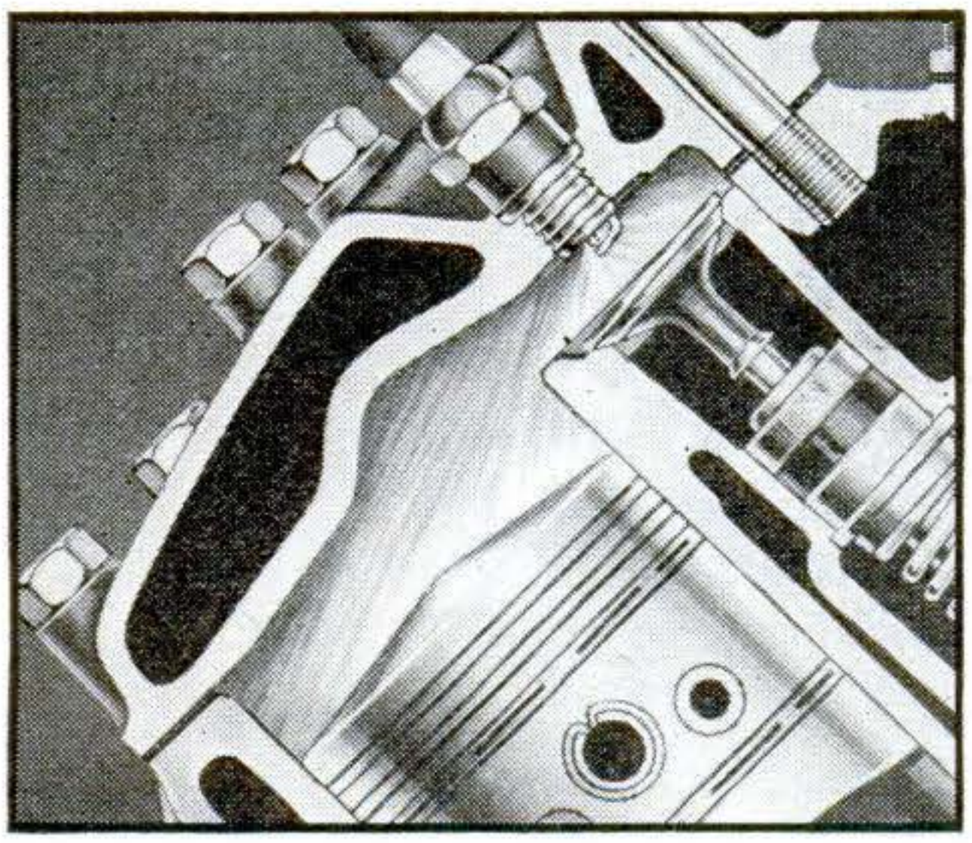
Copyrighted material

Higher Compression boosts



"Here's why it makes the Ford V-8 the most powerful engine in Ford's field," says Dr. Roy K. Marshall*

"When I fill a balloon with just enough air so that its shape is filled out, I find pricking it with a pin causes the air to leak out slowly. Now if I take the same amount of air and compress it in a smaller space by squeezing the balloon, I find pricking it causes the balloon to pop. That's because the tiny molecules of air have been pushed closer together. When I pricked the balloon, in their rush to get out of cramped quarters they forced themselves through the hole much faster (and with more force, too)."

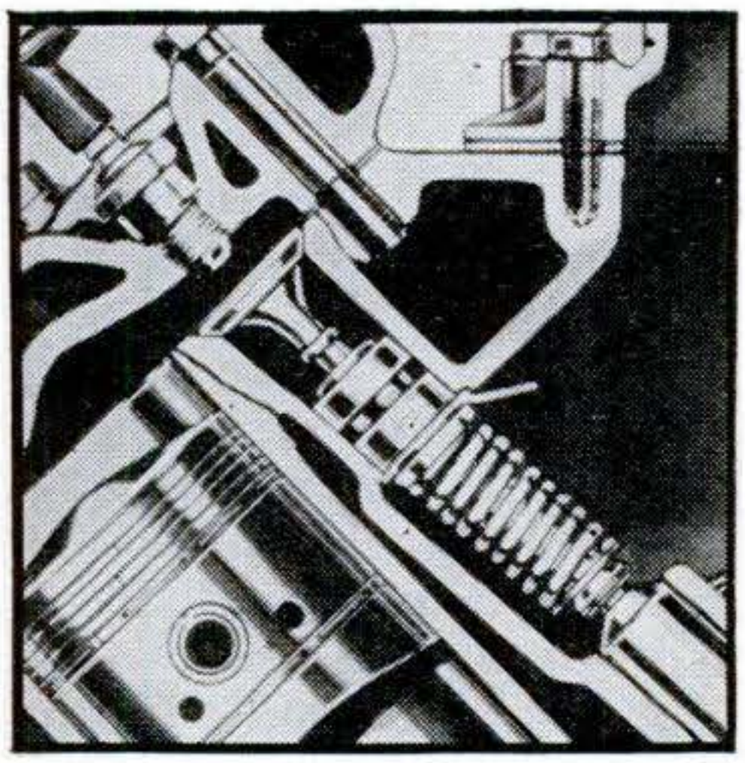


"This experiment is a very simple explanation of what we mean when we speak of the Ford Strato-Star V-8's higher compression. With Power-Contoured Combustion Chambers and new high-lift valves, Ford engineers have made it possible to feed gas more quickly into the cylinders and pack it in more tightly. This higher compression is the big reason for the greater horsepower in the 1952 Strato-Star V-8. And you get it with the economy of regular gasoline."

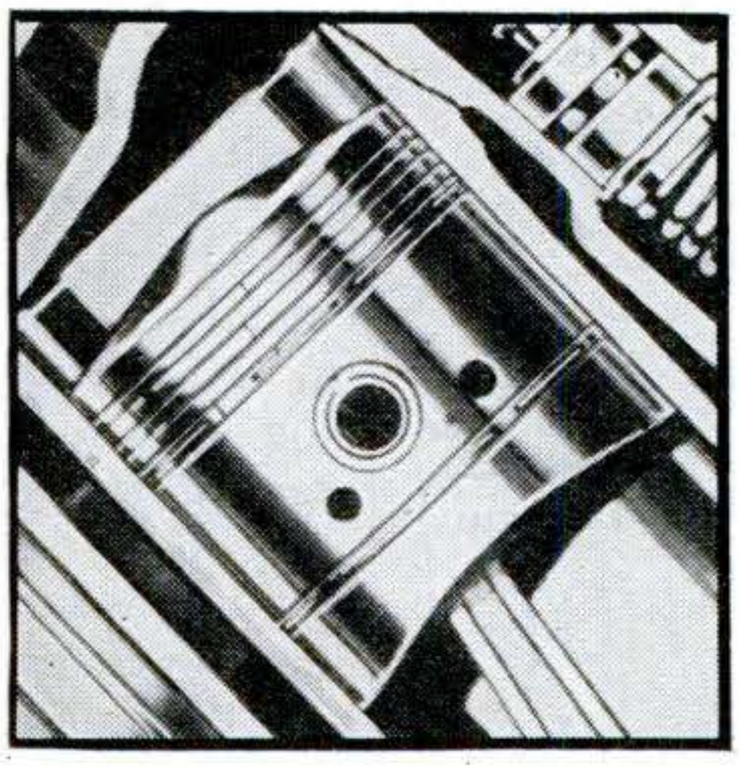
**Noted science editor, educator and TV commentator, Dr. Marshall is nationally famous for his simplified explanations of complicated things.*

Copyrighted material

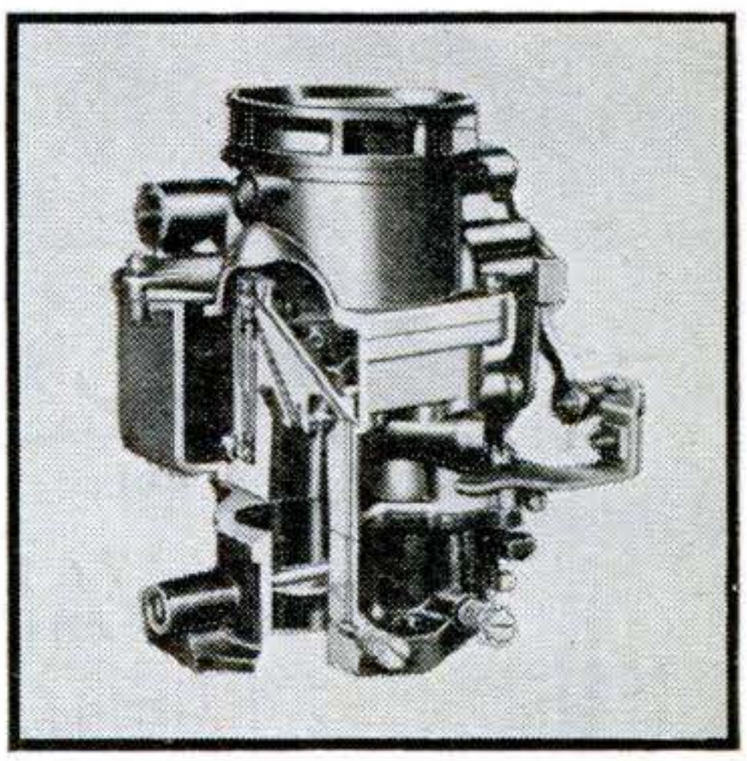
FORD V-8 Power!



Free-turning Valves. "Ford's unique low-friction valve keepers permit free-turning of the valves. This automatic rotation minimizes warpage, wear and sticking."



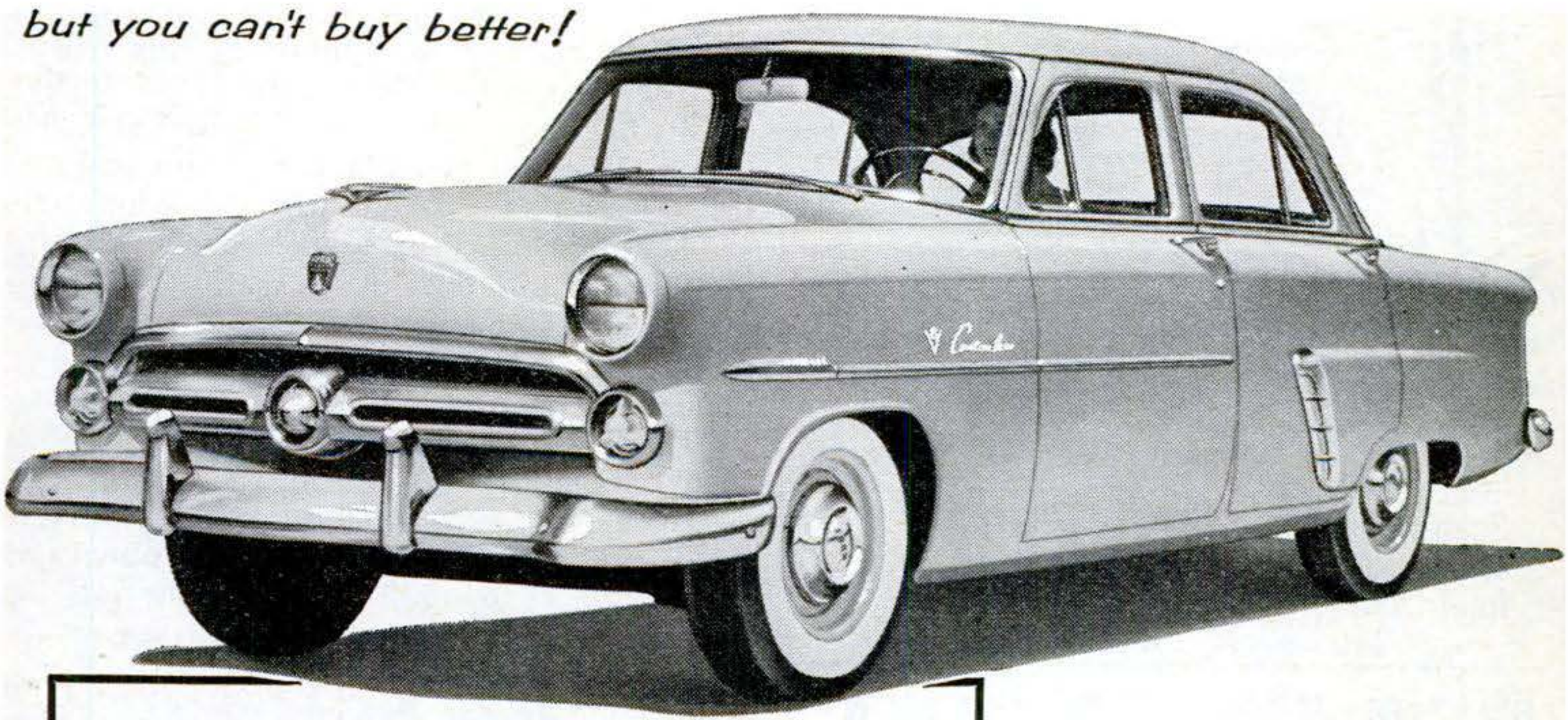
Super-fitted Aluminum Alloy Pistons. "Ford's pistons are exceptionally efficient. Their lighter weight means less shock on main and rod bearings. Controlled expansion keeps clearance between piston and cylinder walls precise at all times."



Dual Downdraft Carburetor. "The V-8's carburetor is actually two units in one. This design gives greater air velocity for better vaporization of the fuel into a more combustible mixture from idle through highest speeds."

You can pay more . . .

but you can't buy better!



FORD V-8 FACTS

- ***It's the only V-8 in the low-price field.***
- ***It's the type of engine offered in America's finest cars.***
- ***Ford has been building V-8's for 20 years and has built more than all other makers combined.***

White sidewall tires optional at extra cost. Equipment, accessories and trim subject to change without notice.

Copyrighted material

FOR FASTER, EASIER SOLDERING-

2-Speed Element Reaches Soldering Heat In 40 Seconds

This 110-115 volt AC-DC iron goes to work *fast!* Pressing the button shoots a booster charge of 100 watts within the tip—brings it to soldering temperature in just 40 seconds! Then, only 25 watts maintain normal tip temperature comparable to conventional irons drawing 100 watts. For heavier soldering jobs, full current is always available by pressing the button.

The Vari-Hot iron is *light*—only 10 ounces—a boon in continuous soldering operations. Adjustable rest on shaft permits laying iron down with no danger of burning surfaces. Shock-proof Durez handle. Tapered chisel type tip plated with "Vanderloy" provides extreme durability to tip. 28-32 volt AC-DC model also available for aviation use off airplane power supply.

ONLY $7.75

For home shop or professional use, there is no finer iron! Not sold in stores—buy direct from Snap-on Branch (in 42 principal cities) or order direct from factory. Send remittance with order form below.

—at your local Snap-on branch or order direct from factory.

*Snap-on is the trademark of Snap-on Tools Corporation.

SNAP-ON TOOLS CORPORATION

8060-I 28th Avenue, Kenosha, Wisconsin

I enclose check (or money order) for $7.75. Send me postpaid one Vari-Hot Soldering Iron.

NAME.....

ADDRESS.....

CITY.....ZONE...STATE.....

Gus Pulls a Trick Play

[*Continued from page 230*]

Gus didn't answer. He merely stared at the tank bottom.

It had come from the tank, that gummy business. But what? The gas showed nice and clean. Then he noticed that the gas tank had been patched. He stared at the soldered seams. And suddenly he had it.

"What happened to this tank?"

"Scraped something in the road a couple of weeks ago and picked up a gash in the bottom. The driver had the boys in the metal shop patch it up. Why?"

"Mr. Thompson, whoever did that patching job used an awful lot of solder on the seams. The soldering flux has been seeping out of the seams and mixing with the gas, getting as far as the fuel pump, then softening the coating on the diaphragm and creating that gummy stuff I showed you."

"Can it be fixed?"

"Sure. Let me put the pump to soak, and I'll tell you what to do."

He dropped the fuel pump into a pan of solvent, then took two cans off the shelf, made a mixture of the two liquids and poured it and the gas into the tank.

A Little Medicine for the Gas Tank

"This is wood alcohol and acetone. It'll neutralize that flux. Just tell the driver to add a pint of each to every five gallons of gas. In a week or so, I think the flux will have worked out."

Gus finished up the job and looked at his watch. "Well, if you hurry, you can make the game on time. I hope you boys win."

Thompson paid up, shook Gus's hand and hopped into the driver's seat.

The rest of the day fell into its normal pattern, and Gus was closing up when the phone rang.

"This is Coach Thompson."

"What happened? You miss the game?"

"Heck no! Take a look at your evening paper, and see what one of your local news photographers found. You got a paper?"

"I think it just came. Hold the line."

Gus found the paper and turned to the sports page. In a four-column photo he saw the scoreboard: seven-six for Jefferson.

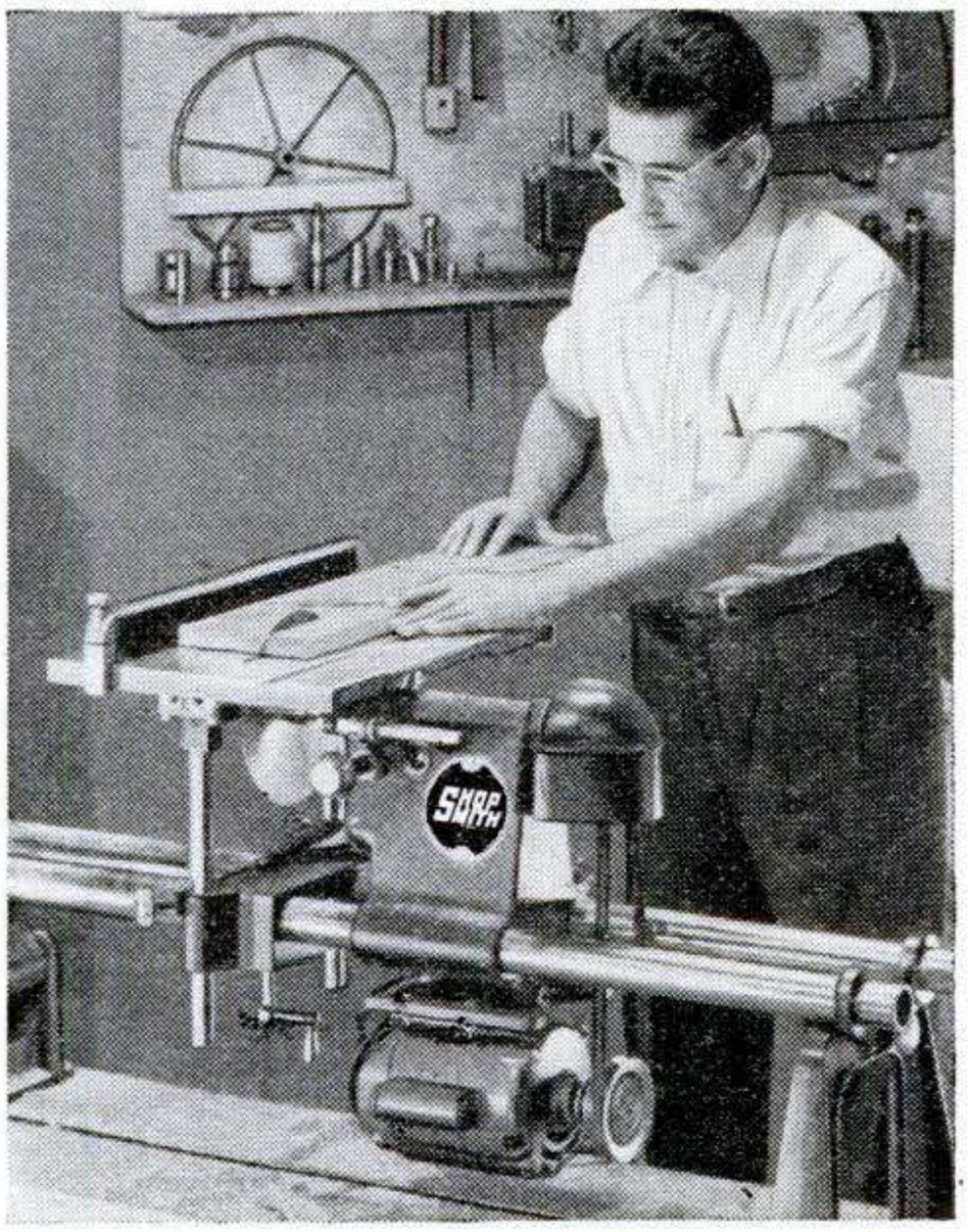
Gus picked up the receiver again. "Well, congratulations on your . . ." The photo caught his eye a second time. The rooting section—a card stunt—spelling out "GUS" in big, if somewhat ragged, letters. END

Next Month: Gus and the dope runners.

Copyrighted material

125,000 ELECT SHOPSMITH

Complete workshop in single unit outperforms and outsells individual power tools—some of SHOPSMITH'S 125,000 owners tell why



OWNER DEMONSTRATES SHOPSMITH "It's a home appliance for men," says SHOPSMITH owner Earl Swift. "Eight-inch circular saw. Twelve-inch disc sander. Thirty-three-inch wood lathe. Vertical and horizontal drill presses. Each a multi-purpose tool in itself and all engineered into one compact unit. No wonder it's America's largest-selling power tool!"

HOMEOWNER: "Thanks to SHOPSMITH, I can have a big-capacity power shop in my crowded basement. SHOPSMITH, mounted on retractable casters, can be rolled into a corner only 18" x 60"! It's a lot of shop in a little space!"

ENGINEER: "Precision is my business. I checked SHOPSMITH from spindle tip to tail-stock before I bought mine. It's built with the kind of precision you'd expect to find only in the largest machine tools. That spindle tip, for example, is machined to a tolerance of .0002". And that's real precision!"

EXPERIENCED WOODWORKER: "In woodworking, there's no substitute for the *right* tool. And with SHOPSMITH, you always have the *right* tool for any sanding, sawing, turning or drilling job. I've replaced my single-purpose tools with SHOPSMITH. It does jobs I couldn't begin to do with my other tools."

BEGINNER: "I don't know much about woodworking—or power tools. But I'm learning fast with SHOPSMITH. It's plenty easy to operate, no complicated adjustments. It's safe. Above all, it turns out work that makes me look like an expert."

CARPENTER: "Most of my work is on big projects. No flimsy, bronze-bearing tools for me. Take SHOPSMITH, now. There's a tool with the kind of capacity I can use. It can do 1001 jobs too big or too heavy for most home workshop tools."

ONLY $189.50

complete except for ½-hp. motor **($34.50).** You can see SHOPSMITH demonstrated at leading hardware and department stores or at any Montgomery Ward store.

GET all the FACTS FREE

16-PAGE BOOK filled with detailed specifications, accessories.

MAGNA ENGINEERING CORPORATION, Dept. 220-A
at factory nearest you
12819 Coit Road, Cleveland 8, Ohio, OR
Menlo Park, California
Please send me free 16-page SHOPSMITH catalog.

Name _____

Address _____

City _____ *State* _____

Copyrighted material

How Trees Make a House More Valuable

[Continued from page 153]

rows of trees, but one is probably all you have room for. Ask the weather bureau the direction of the prevailing winter wind and mark on your plan a row of closely planted trees at right angles to it. Put them far enough away from the house to leave a sheltered space. (If there are other houses close to you, they may divert the wind so that you get gusts from different directions. But you can find this out only by living in the house a while.)

Because a windbreak is needed most in winter, you'll want evergreens. Allow a six-foot-wide strip on your plan for one row. Some of the best trees are rather slow, so you may want to make a temporary outer wall of fast-growing, inferior trees, with a second, slow-growing row inside it.

Wind creates a difference in pressure that sucks heated inside air out around doors and windows. One test has shown that it takes as much fuel to heat a house when it's 32° with a 12-mile wind, as when it's down to zero with only a three-mile wind.

Privacy. The same picture windows that let in the sun often put your living room in a showcase. Trees will give you privacy without cutting off light and air, as curtains do, and will often block traffic noise as well, which curtains don't.

Vision and sound both hit at a low angle, so low bushy trees are best for this job. If you want a year-round screen, use evergreens, but plant several varieties in an irregular row. This will also put a picture in your picture window instead of a view of your neighbor's trash cans.

Figure by experiment the angles of view you want to block, then mark your plan. One bush may be enough, or it may take a whole row. If possible, keep the trees well away from the window—you don't want to feel you're living in a jungle.

Tree walls can divide up your yard into its various use areas as well as fences can—and never need paint. If you like to rebuild old cars out in the yard, a tree wall will keep you and the missus both happy. If she wants a handy clothesline but doesn't like her scanties competing with the peonies, the tree wall will keep them private. If kids

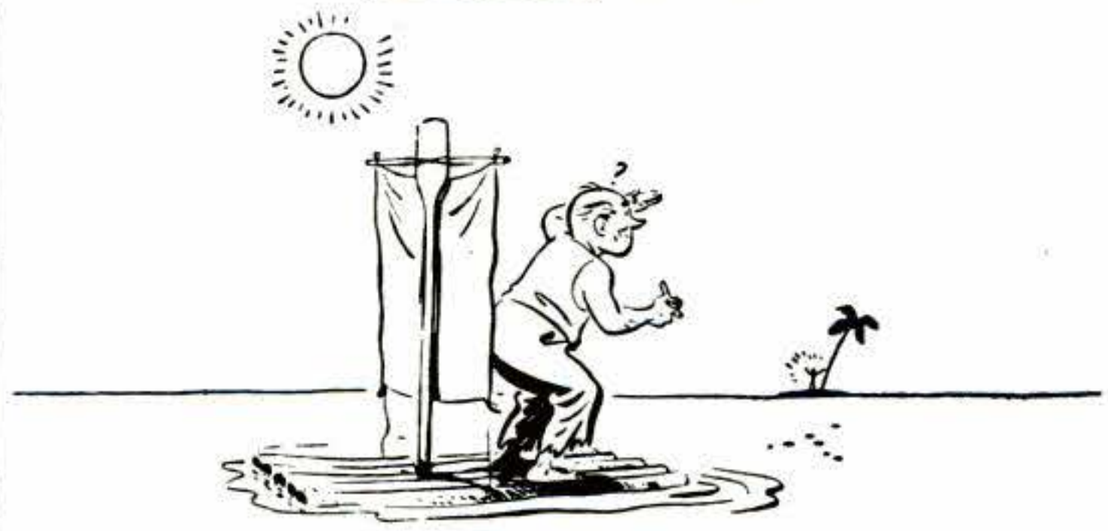
[Continued on page 238]

UNCLE WALTER

IT SMELLS GRAND

AROMA SWEET AS ANY ROSE—

IT PACKS RIGHT



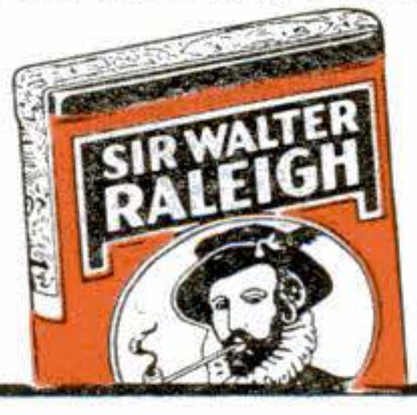
PACKS TO PLEASE YOU—
GOODNESS KNOWS!

IT SMOKES SWEET

WITH EVERY PUFF
YOUR PLEASURE GROWS!
-with Sir Walter Raleigh!

IT CAN'T BITE!

SIR WALTER RALEIGH'S BLEND OF CHOICE KENTUCKY BURLEYS IS EXTRA-AGED TO GUARD AGAINST TONGUE BITE, AND SIR WALTER RALEIGH NEVER LEAVES A SOGGY HEEL IN YOUR PIPE. STAYS LIT TO THE LAST PUFF.



It costs no more to get the best!

Copyrighted material

Copyrighted material

Your choice of block or strip design

Just lay *prefinished* Bruce oak flooring right over your old floors . . . no sanding or finishing

You can give your home new beauty at low cost with a prefinished Bruce Hardwood Floor. Completely finished—even waxed—at the factory, this highest quality oak flooring can be nailed right over old floors. No sanding or finishing . . . no mess or smell. Ready for use as soon as laid. Made in strip or block (parquet) design.

"Scratch Test" Finish — The Bruce factory-applied finish is baked into the pores of the wood. The "Scratch Test" (left) will prove to you that this durable finish does not scratch or chip or mar like an ordinary floor finish.

Moderate in cost — A new Bruce Hardwood Floor will cost you less than a good rug or carpet. Easy to keep clean and beautiful, too. It's just the thing to use in fixing up or adding a room. Let your lumber dealer give you an estimate. Mail coupon below for colorful literature.

MAIL FOR FREE LITERATURE

E. L. Bruce Co., Box 397-C, Memphis 1, Tenn.
Send complete information on prefinished Bruce Hardwood Floors.

Name . . . . . .

Address . . . . . .

City . . . . . State . . . . .

BRUCE

Bruce Hardwood Floors

Product world's largest hardware flooring maker

How Trees Make a House More Valuable

[Continued from page 236]

need a corner for sandbox and battered toys, a tree wall will conceal them.

This kind of division depends a great deal on your family's living habits. Better wait until you've lived in a house a year or so before you try it.

Outdoor living room. A shade tree, a windbreak and a screen can be combined into an outdoor room. Keep in mind when you'll use it. For a snug corner to catch the sun in early spring and late fall, the windbreak is most important. But a place to drowse away a summer afternoon should be well shaded and open to the breeze.

If you want a floor to your open room, don't seal the ground with concrete or mortared flagstones. Your trees depend on ground seepage for their water. Put down a layer of gravel or tanbark that will let the water through.

Play. Trees make wonderful playgrounds for children—natural jungle gyms, swing and trapeze supports, tree houses for young Tarzans. But unfortunately, kids grow a lot faster than trees. If the children are already on hand there's not much you can do except plant for grandchildren.

Fruit and flowers. The common fruit trees can be grown at home, and they are relatively fast so you get a crop in a few years. Many varieties come in dwarf types that fit small yards. Remember that fruit trees need lots of care before they bear.

Flowers are easier to handle than fruit, even if they don't make such good pie. Although orchard trees do bloom, the showiest blossoms come from trees with worthless fruit. Some trees have handsome flowers but keep them only a short while and are rather homely the rest of the year.

Flower or fruit trees can frequently be used for screening, too, so keep that in mind in fitting them into your plan.

Appearance. Many trees are planted just for what they add to the over-all appearance of the house and yard. Every house has its own problems. You may not be able to match the job of a professional landscape architect, but if you read up a little on the subject, use common sense and keep basic principles in mind, you can use trees to make your property more beautiful—and more valuable. Here are some pointers.

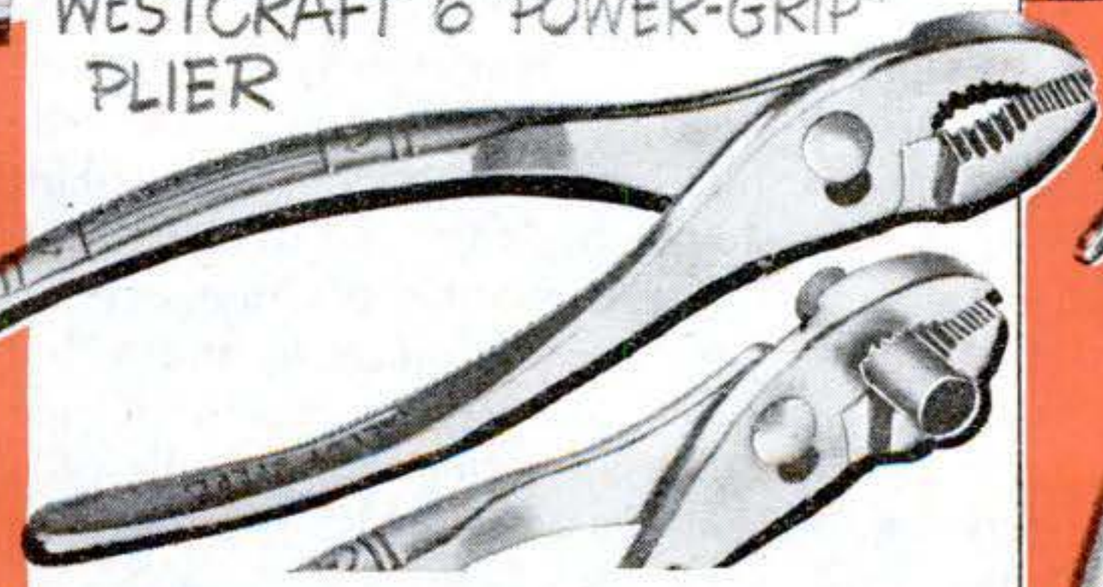
Careful planning is most important. Look at your house as objectively as a stranger

[Continued on page 240]

Copyrighted material

How Creative Designing Gives You "Something Extra And Better:"

Long, anti-blister handle of clear chip-proof Tenite snuggles into your palm like an egg . . . gives this screwdriver new extra power to turn toughest screws easier! (Compare, and see how you can tighten screws up to a **full** twist further than with old-style screwdrivers!) Perfectly balanced functional design. Chrome-plated alloy steel blade of square stock for modern styling, extra strength! (HR1361) **85c**



50% more gripping power, 38% more leverage from exclusive patented jaw design. Precision tooled from alloy steel . . . so accurate you can pluck a hair! (HR1124) **95c**

Whirls through wood, metal, plastic in a flash! More accurate. 1250 r.p.m. motor for ideal speed-power balance. Alloy steel-cut gears. 3-jaw chuck. Trigger switch. (HR1379) **$12.48**

CHOOSE FROM OVER 1,100

Wizard-Westcraft Tools (SOLD ONLY BY) Western Auto

STORES AND ASSOCIATE STORES

NOTE: WESTERN AUTO ASSOCIATE DEALERS OWN THEIR OWN STORES AND SET THEIR OWN PRICES, TERMS AND CONDITIONS. PRICES MAY VARY DUE TO DIFFERENCES IN LOCAL CONDITIONS. IF YOU DO NOT KNOW THE LOCATION OF YOUR NEAREST WESTERN AUTO STORE, WRITE WESTERN AUTO SUPPLY CO., 2107 GRAND, KANSAS CITY, MO. (PS92)

Copyrighted material

The Saws You Want

at the prices you want to PAY!

RETAIL SELLING PRICES
For Rip, Cut-Off, Easy-Cut and Combination Saws

6" - $1.75	9" - $2.65
7" - 2.00	10" - 3.15
8" - 2.15	12" - 4.35

Supplied with Round or Special Shape Holes

As listed in Simonds Catalog "B"

SIMONDS SI-CLONE SAWS

Best buy in years for home-workshoppers, contractors, and schools . . . these *guaranteed* saws of Simonds famous quality. 13 types, including carbide-tipped, dado heads, and metal-cutting saws, up to 12" diameter, with round or special-shaped center holes for all electric hand saws. Look at these prices...and try to beat them at Simonds quality level! Drop in on your hardware dealer today...tell him you "want to see Simonds SI-CLONE line."

Factory Branches in Boston, Chicago, San Francisco, and Portland, Ore. Canadian Factory in Montreal, Que.

How Trees Make a House More Valuable

[*Continued from page 238*]

would. If it's too tall and narrow, trees planted out from the ends can make it look wider. A sharp bank at one end of the lot can be masked by planting. Houses perched on steep banks above the street need horizontal lines of low trees and shrubs.

Frequently shrubs are planted to hide the place where houses meet the ground. This helps older houses that sit up on high foundations. But with a new home set almost flush with the lawn the usual foundation planting often half hides the house and clutters the grounds. Above all, if you plant a tree close to the house bear in mind its future height. Too often a low bush becomes a sprawling giant that darkens windows and sends roots into cellars.

Too Many Is No Good

Trees can also be used for emphasis—around doorways and walks for instance. But beware of planting too many trees. Make each one do several jobs. And remember that if you have a small house on a small lot, a big tree is going to look out of scale when it grows up.

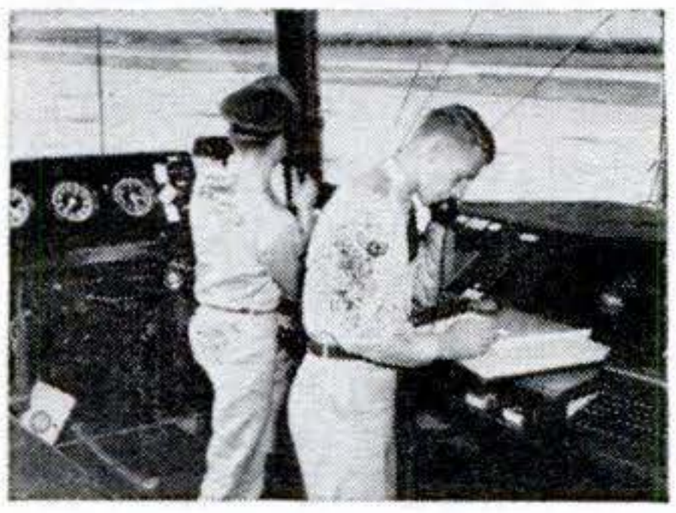
One advantage of planning ahead is that you can do a little at a time as you can afford it and still not have a hodge-podge. One thing you'll have to decide right at the start is how long you're willing to wait after planting for your tree plan to develop. Good long-lived trees are usually slow growers. A tree that's already big is very expensive. A workable compromise is to buy the biggest trees you can afford; use inferior, fast-growing trees where you need the quickest results; and at the same time plant saplings of slower trees to take over later.

If you plan and plant with one eye on the future, you'll add dollars to the value of your property. The exact worth of one tree is hard to figure—one expert tells of a red maple that was variously appraised at nine different values from $75 to $389.83. But all experts agree that a sizable tree is worth more than it would cost to replace it. Real-estate men will tell you that it is easier to sell a house with attractive trees and grounds. In fact one famous firm recently suggested that a seller invest $75 to a $100 on a good tree before putting his house on the market! END

Next Month: How to select the best trees for your house—which ones do which jobs, which ones are suited to your area.

Don't Guess *About Your Future!*

U.S. AIR FORCE



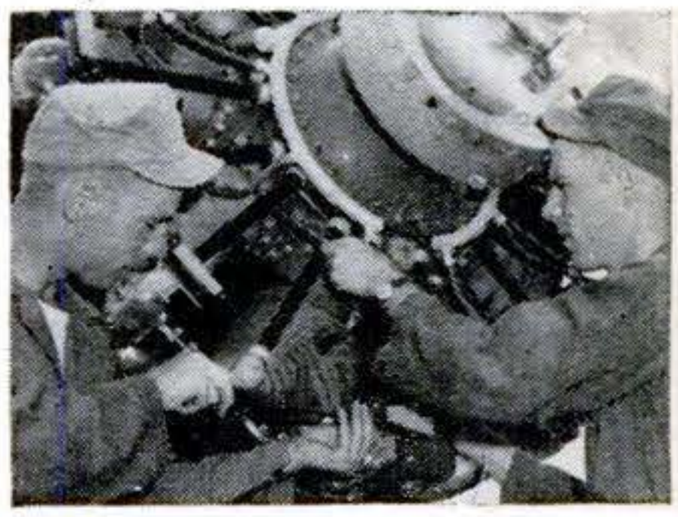
The Air Force needs trained Air Traffic Control Operators

The Air Force needs trained Ground Control Approach Operators

Your United States Air Force is expanding rapidly. It needs *YOU* and your special technical knowledge. Your skill and "know how" can serve your country and yourself to best advantage in today's vital job of national defense.

Eliminate the guesswork from your future and advance in your technical field to more profitable and satisfying rewards with your U. S. Air Force.

The Air Force needs trained multi-engine Flight Engineers



The Air Force needs trained Aircraft and Flight Mechanics

Here Are a Few of the Many Great Air Force Opportunities!

RADIO AND RADAR MAINTENANCE
AIRCRAFT ACCESSORIES MAINTENANCE
WEATHER • ARMAMENT SYSTEMS
FOOD SERVICE • WIRE MAINTENANCE
MISSILE GUIDANCE SYSTEMS
PHOTOMAPPING
INTRICATE EQUIPMENT MAINTENANCE
MUNITIONS AND WEAPONS • SUPPLY
VEHICLE MAINTENANCE • METAL WORKING
FABRIC, LEATHER AND RUBBER • MEDICAL
BUDGETARY ACCOUNTING AND DISBURSING
MARINE • FIREFIGHTING
SECURITY AND LAW ENFORCEMENT
CONSTRUCTION

Act Now!

MAIL COUPON TODAY for Full Information

AIRMAN PROCUREMENT
Headquarters, U. S. Air Force, Washington 25, D. C.
Please send me details about enlisting as an Air Force specialist.

NAME. . . . . .

ADDRESS. . . . . .

CITY. . . . . *ZONE*. . . . . *STATE*. . . . . .

MY SPECIALTY IS:. . . . . .

Copyrighted material

The minute you take hold of a GREENLEE tool, you can "feel" the fine quality and extra craftsmanship that goes into its making. And when you put it to work, you'll immediately see how GREENLEE tools are built to speed your jobs and help you finish them off with a skillful touch. The next time you buy Auger Bits, Chisels, Gouges, a Spiral Screw Driver, an Automatic Push Drill, a draw knife, or other fine hand tools . . . "get GREENLEE" . . . at better hardware and building supply dealers across America.

HANDY WOODWORKING CALCULATOR...ONLY 25c
Converts linear to board feet, gives nail specifications, tool sharpening tips, compares woods, answers countless other questions in seconds.

GREENLEE TOOL CO. 2129 Columbia Avenue ROCKFORD, ILLINOIS: Enclosed is 25c (not stamps), send Handy Calculator to:

NAME.....

ADDRESS.....

CITY..... STATE.....

How I Learned Arc Welding

[Continued from page 207]

Either way, slant the rod 30° from the vertical in the direction it's going.

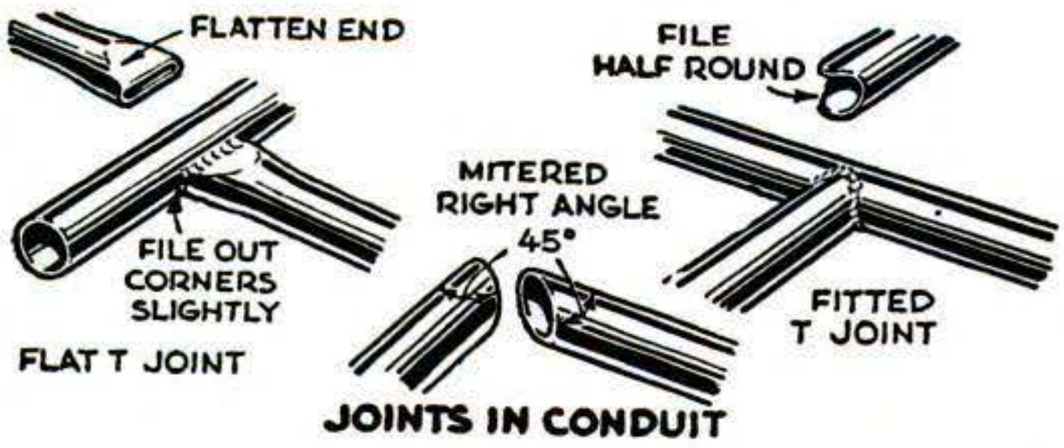
On heavy fillet welds, bevel the pieces to help the arc penetrate. If one bead does not fill the gap, or you want a larger fillet for strength, clean the slag off and lay a second bead on top.

Corner welds are the reverse of fillet welds. Place the parts upside down like a peaked roof, and weld across the ridge.

Welding thin stock. The problem with sheet metal is burning through. Below 18-gauge (3/64″) stock, use 1/16″ rod and the low heat (32 amperes). For thicker stock up to 14 gauge (5/64″), use 1/16″ rod and the next higher heat (42 amperes on my small welder).

Edges are most vulnerable to burning because the heat dissipates less readily than from within the sheet, and the arc hits the full thickness all at once. That's why a good fitup is critical with thin stock, and butt joints should be made with the edges touching.

A good joint for thin stock is the edge



JOINTS IN CONDUIT

weld. A short 90° bend in one piece is clamped against the other, and a bead run across the edges of both.

Thin-wall conduit, ideal for modern furniture, garden accessories, and toys, burns easily at the end. The lowest heat and 1/16″ rod should be used. Start the arc on the through member of a joint, which has no edge to burn, and weave it across the other in short "takes." Once you get the edge covered you can switch to higher current for a smooth weld. The flattened T joint shown on this page is easier to make than the ordinary circular joint.

If you burn through, it is possible to weld the hole shut with a deft touch of the arc. Practice on short bits of conduit before tackling a job. The knockout slugs from electrical junction boxes can be welded into the ends of conduit furniture legs to keep from cutting cookies out of your rugs.

[Continued on page 244]

Copyrighted material

HUDSON HORNET

Scores Sweeping Stock Car Successes Using Dependable

CHAMPION SPARK PLUGS!

26 VICTORIES IN 30 STARTS

(1952 Record through July 13th)

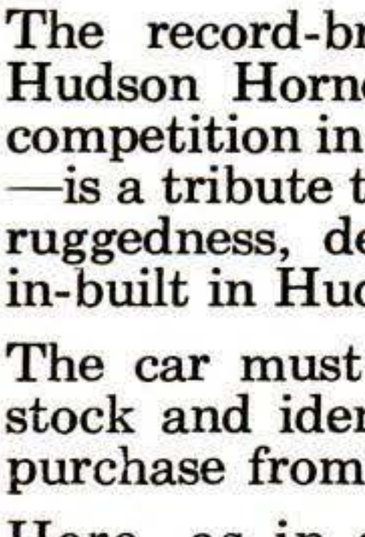
The record-breaking success of the Hudson Hornet in strictly stock car competition in 1952—as well as in 1951—is a tribute to the handling qualities, ruggedness, dependability and safety in-built in Hudson's step-down design.

The car must be certified as strictly stock and identical with one you can purchase from your local dealer.

Here, as in all racing, Champion Spark Plugs are unchallenged for top performance and dependability. For not only have they been in the winning Hudsons, but in other victorious stock cars in many other events.

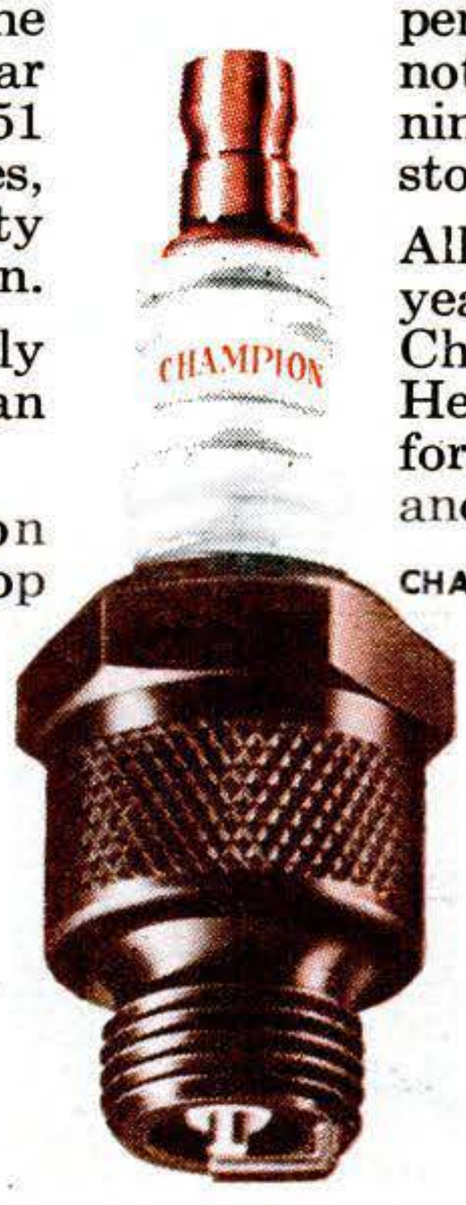
All of these cars, regardless of make or year, have used the standard type Champions recommended for that car. Here's solid proof that the Champions for your own car are tops in performance and dependability.

CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO



Meet Mr. M. H. Toncray
Chief Engineer
HUDSON MOTOR CAR CO.

"CHAMPIONS have been standard equipment on our cars for over twenty years. We know we can depend on them for top performance on the highway and on the track."



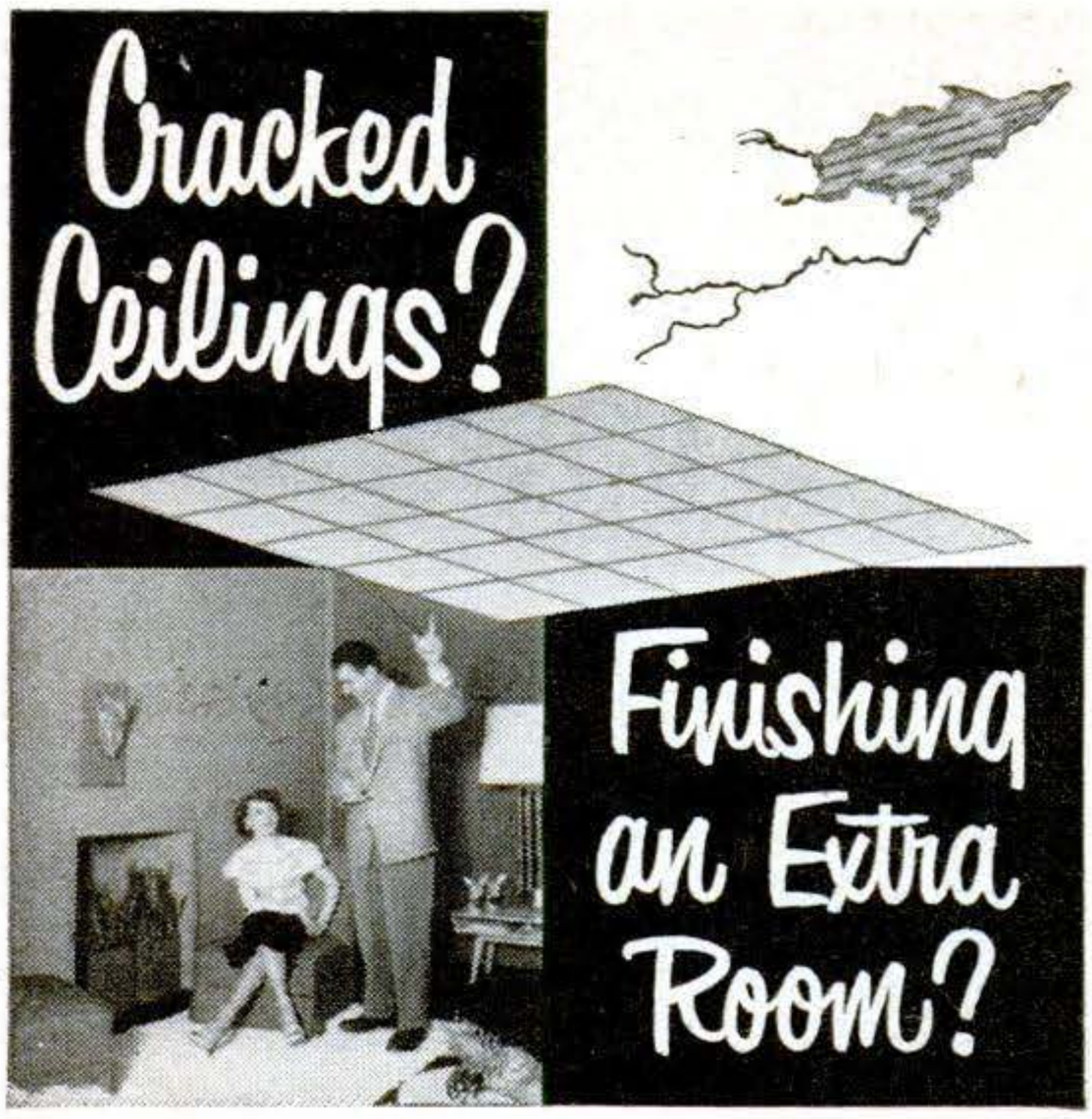
HERB THOMAS
1951 Stock Car Racing Champion
Nascar Grand National Circuit
says—

"The Hudson Hornet I drive is equipped with regular stock CHAMPIONS, the same as those sold by your neighborhood Hudson dealer or service station."

FOLLOW THE EXPERTS

USE THE SPARK PLUG CHAMPIONS USE

Copyrighted material



YOU Can Apply Modern Ceilings Easily with

NEW UPSON CEILING TILES

INSTALL THEM YOURSELF!

Re-cover right over cracked plaster on 12" furring strips. In new construction, apply direct to joists. Positive, permanent application is quick and easy with color pins that match the neutral ivory finish. 6-ply laminated construction. Crackproof! For kitchen and bathroom ceilings, too.

WASHABLE AND WATERPROOF!

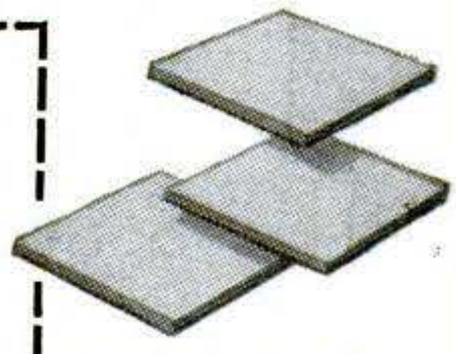
Syntho-surface coating proved by abrasion tests equal to two coats of aged oil base paint! Stands repeated washings! Even grease and oil spots can be removed with gasoline. Can be painted if you like—one coat covers. High insulating, light reflecting qualities!

Send 10c and coupon for idea booklet on home improvement!

THE UPSON COMPANY
3109 Upson Point, Lockport, N. Y.

I enclose 10c for 32-page Idea Booklet. Include Instruction Sheet for applying Upson Ceiling Tiles.

Name_____
Street_____
City_____
State_____



UPSON Ceiling Tiles are 12" square and 3/8" thick with square corners, Shad-O-Beveled edges.

How I Learned Arc Welding

[Continued from page 242]

Holding work in position. Always clamp the pieces if possible. Often they can be clamped right on the welding table, with bits of metal or electrode stubs under them to maintain alignment. Vertical pieces can be held by clamping temporary braces to them. Spring clamps that you can apply with one hand will do wonders for your temper. Heavy blocks, old castings and the like come in handy as hold-down weights.

In a pinch, you can hold a piece with one hand and tack-weld it to another with a touch of the electrode here and there.

Can't weld it? Braze it. Brazing resembles hard soldering, the "solder" being brass, the flux borax or a trade-named preparation. Brass rod with a flux coating is also available.

The carbon-arc torch that also plugs into your welder has sufficient heat to braze stock so heavy that it is beyond a small welder's capacity to weld.

The torch holds two pieces of carbon, which can be touched together to strike an arc. Connect one torch terminal to the ground tap on the welder and the other to a medium-current tap. Wear your helmet.

By varying the distance between the carbons, you can have a short intense arc or a long, cooler one. Use it like a torch flame to heat the work to any desired degree. Heavy pieces will take a considerable time to heat up, but small ones turn red almost instantly.

The parts must be cleaner than for welding. File or grind them bright. Position and clamp them and apply the torch. It's hard to see the work change color through the helmet, but watch for a moist or sweaty appearance of the metal. This indicates it is red hot and ready to take the brazing rod. Hold the rod in the arc until a droplet melts off. Then keep the arc on the work until the droplet flattens out and melts into the joint.

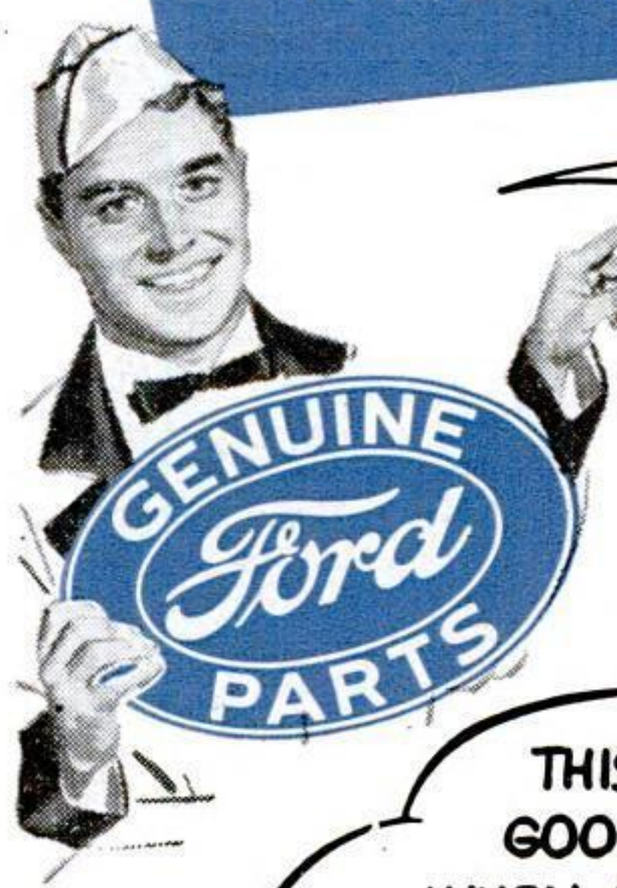
Other uses for the carbon-arc torch are preheating work for welding (which may enable you to handle jobs you couldn't otherwise), heavy soldering, and heating tools for hardening. END

Miss-iles

WOMEN are a good deal like missiles. They can be classified as guided, unguided and misguided.—*Hy Sheridan in Flying.*

Copyrighted material

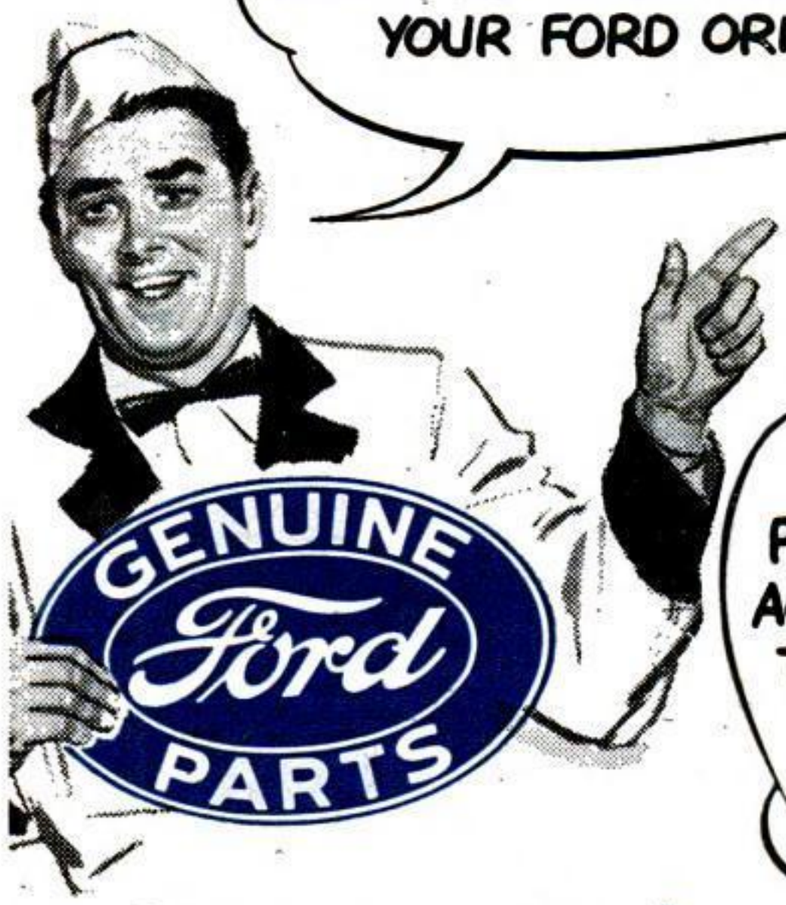
Advice to Ford Owners



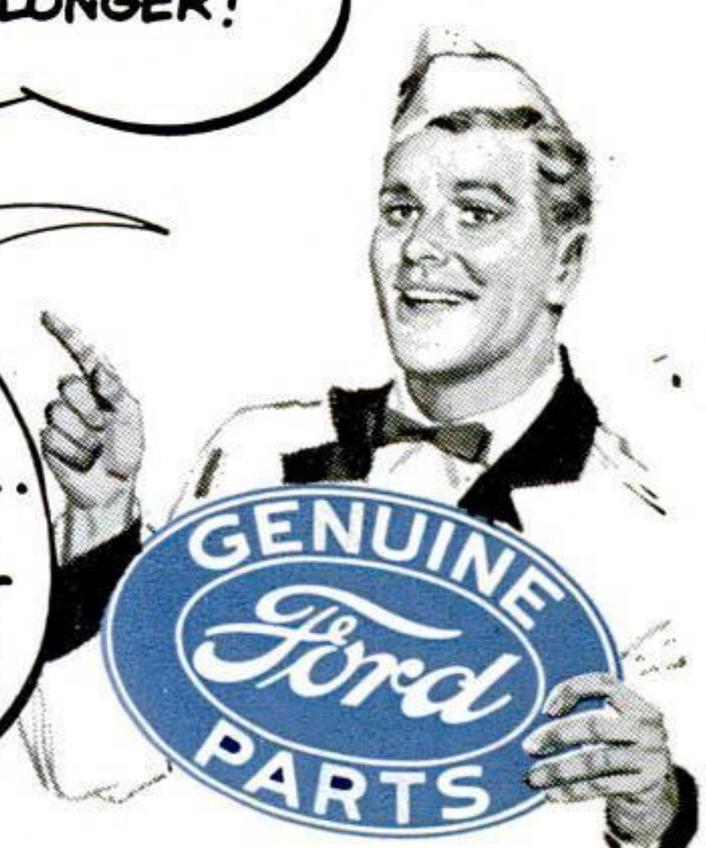
WHEN YOUR FORD NEEDS SERVICE... **SPECIFY** THAT REPLACEMENT PARTS ARE **GENUINE FORD PARTS**.

THIS CERTAINLY MAKES GOOD SENSE BECAUSE WHEN **GENUINE FORD PARTS** ARE USED, YOU GET EXACTLY THE SAME QUALITY PARTS AS WERE USED TO BUILD YOUR FORD ORIGINALLY.

YES SIR! THEY'RE THE PARTS MADE EXPRESSLY FOR **YOUR FORD**. THEY'RE MADE RIGHT TO FIT RIGHT TO LAST LONGER!

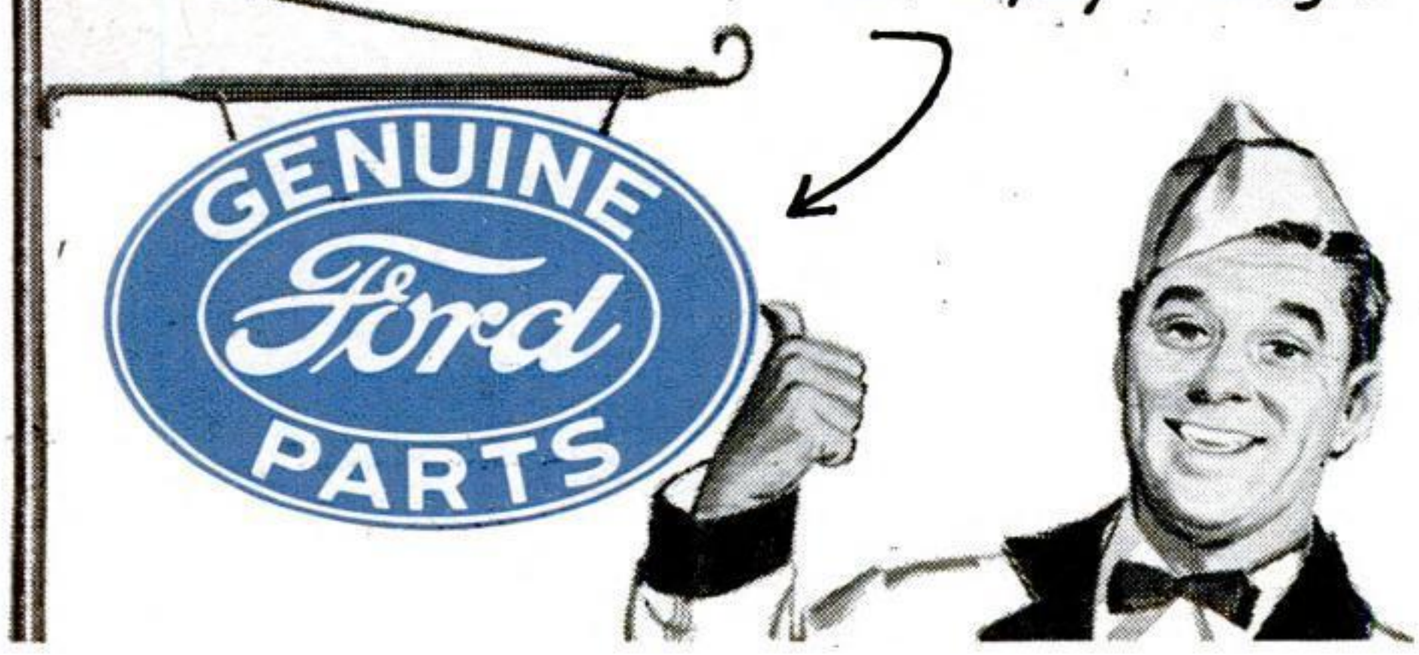


WHAT'S EQUALLY IMPORTANT... GENUINE FORD PARTS ARE TRACK TESTED IN ACTUAL ROAD DRIVING SERVICE... THEY'RE **QUALITY PROVED** BEFORE THEY EARN THE RIGHT TO WEAR THIS BLUE LABEL OF DISTINCTION.



P.S. to the thrifty

You'll save money, time and trouble by specifying Genuine Ford Parts. To be sure of getting them, always take your car for service to your Ford Dealer or to any of the selected independent garages that display this sign.



LET'S GET ACQUAINTED

Copyrighted material

[Continued from page 93]

and-egger ($100 a bout) when he got his nose broken in a fight and his wife made him retire.

Then Jim went to work as a machinist. He liked this work, and the men with whom he worked. But he also liked to draw—he had become a tattoo artist in his western days—and he indulged this hobby by taking a correspondence course in cartooning. He was on a night shift, and whenever he was waiting for a piece of work to come out of a machine (sometimes it took all night in those days) he drew cartoons.

Heroes Are Made, Not Born

Just before the First World War Jim got a chance to make a career out of his drawing. He joined a local outfit planning to produce cartoon advertisements to be run in motion-picture theaters, and within three months was head of its art department. Then the war came along—and knocked the business flat. Jim was lucky to get his old job back with the Alliance Machine Co.

It was 1922. Jim was 33 and had a wife and two children. When he was laid off from the shop in a seasonal shutdown, he took a job as a coal heaver in a power plant. But he needed steady work. He was about to become a policeman when his son brought him a telegram while he was at work on the coal pile.

Not Genteel Enough

The NEA Service in Cleveland, one of the largest newspaper-feature syndicates in the world, liked the cartoons he had submitted well enough to offer him a job drawing one for them every day.

"Out Our Way" first appeared on March 20, 1922. It wasn't a howling success. Some of Cleveland's more solid citizens complained that machinists were not fit subjects for the comic page. They were all for replacing "Out Our Way" with something more genteel. But many of Cleveland's 100,000 shop workers rose up and threatened to boycott the paper if it even *tried* to drop the shop cartoons—and they've been going strong ever since.

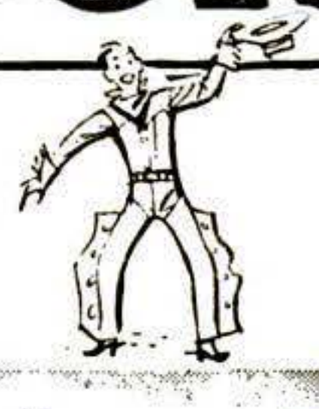
Though he lived in Ohio for many years,

[Continued on page 248]

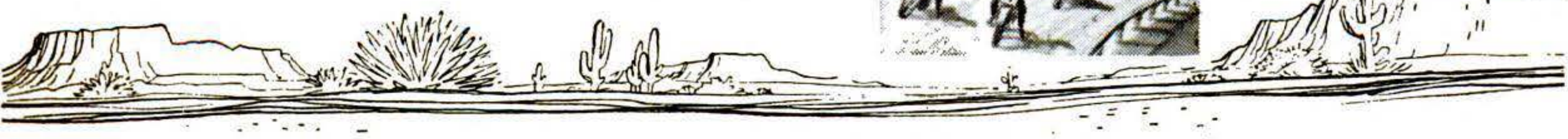
Go high, wide and handsome on the world's best motorcycle!

HARLEY-DAVIDSON

HYDRA-GLIDE®



For the greatest sport in the world, spine-tingling thrills and pleasure-packed adventure, ride a Harley-Davidson. If you've ever broken a frisky colt, or hankered to, you know what we mean. You'll make the dirt fly at field meets, club events and endurance runs. You'll pal with the greatest bunch of red-blooded, fun-loving guys and gals in any sport. Go barreling along over highways and byways. Get going . . . see your dealer and take a buddy along. Or send 25 cents for illustrated literature and a copy of the ENTHUSIAST Magazine, filled with exciting action pictures and stories. HARLEY-DAVIDSON MOTOR CO., Dept. PS, Milwaukee 1, Wisconsin.



Copyrighted material

Only the new Millers Falls No. 966 Sander-Polisher

Does Them All

$37.50 with 6" rubber pad, 6" lamb's wool bonnet, and three 6" sanding discs.

Additional accessories and attachments are available to save you time and money on hundreds of jobs.

- Buffing ✓
- Disc Sanding ✓
- Orbital Sanding ✓
- Drilling ✓
- Grinding ✓
- Polishing ✓
- Waxing ✓
- Mixing Paint ✓
- Wire Brushing ✓

Compare its uses . . . compare its price . . . compare its quality. You'll find no other power tool offers so much for so little. See it at your hardware dealer's or write for full details.

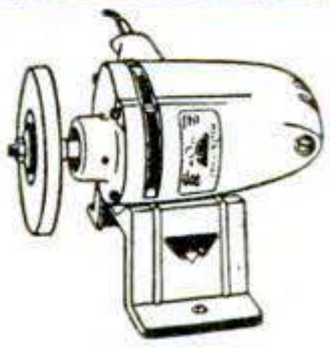
Millers Falls Co. • Greenfield, Mass.

MILLERS FALLS TOOLS
SINCE 1868 ®

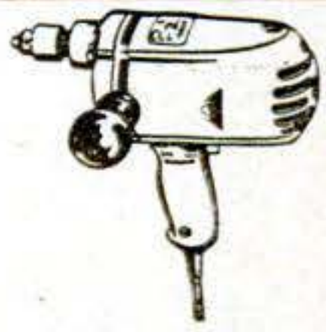
The Mark of Superiority

It's a 6" Disc Sander and Polisher

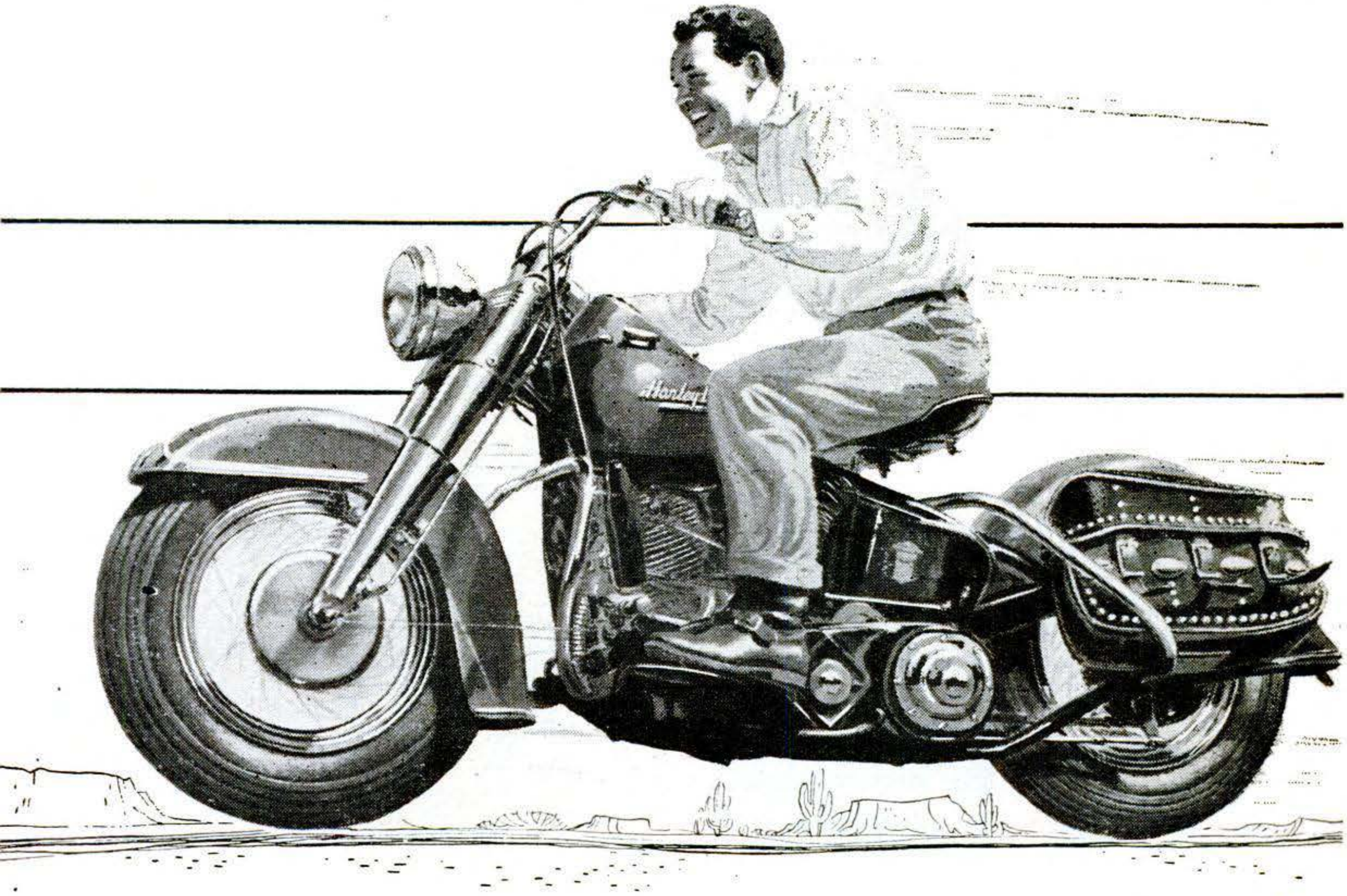
It's a Fine Finish Sander with the No. 980 Orbital Attachment



It's a Bench Unit with the No. 9668 Stand

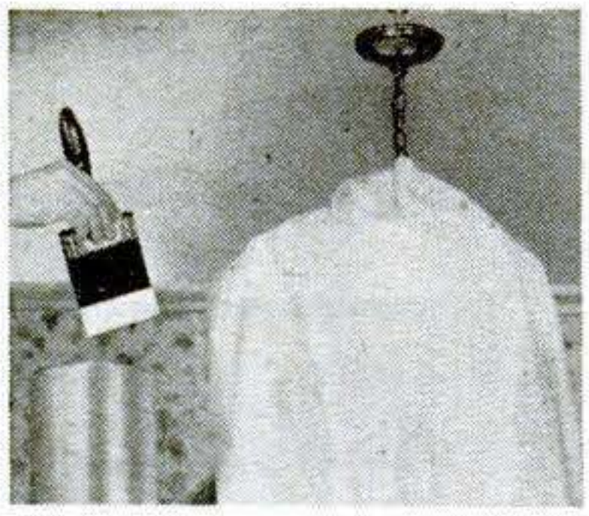


It's a ¼" Drill with No. 9665 Jacobs Key Chuck

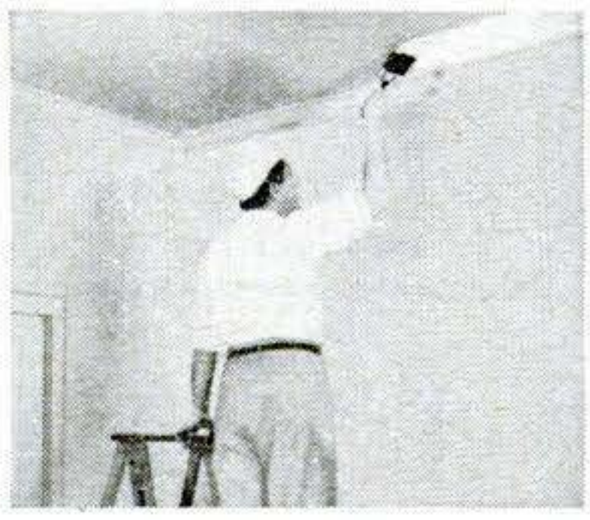


Copyrighted material

Pointers for Home Painters Ceilings:

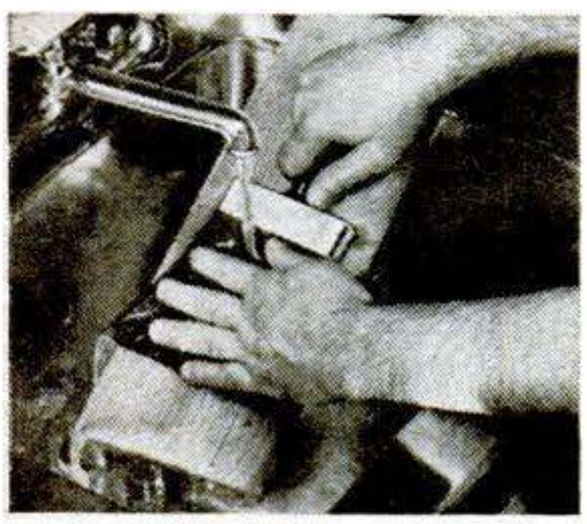


Before painting, loosen base plate of lighting fixtures—drape with small cloth to prevent splattering. Don't overload brush with paint.



Stand on plank across two ladders. Start in corner. Dip brush to one inch. Raise quickly. Use short, light strokes. Paint in areas about four feet square.

Use a commercial hand protector, for quick cleaning of hands when job is done. Remove stubborn paint with thinner. Wash with soap.



For storage, clean brush thoroughly with thinner. Then scrub bristles with warm water and cleaner. Rinse in clear water, comb bristles and wrap in paper and store.

JOB AFTER JOB you'll get best results with a well-tipped nylon paint brush. Durable Du Pont nylon bristles paint smoother . . . are clean and sanitary . . . never get brittle . . . don't break off even under the roughest treatment. And nylon bristles last from 3 to 5 times longer than ordinary bristles. Leading manufacturers make nylon paint brushes in all types and sizes. Look for the name NYLON on the handle. Be sure to pick the size brush designed for the job . . . and demand Du Pont nylon bristles.

150th Anniversary

DU PONT
REG. U. S. PAT. OFF.

Better Things for Better Living
. . . through Chemistry

The best brushes have
DU PONT NYLON BRISTLES

He Makes Shop Jokes Pay

[*Continued from page 246*]

Jim Williams never outgrew his hankering for the West. In 1940 he bought a 45,000-acre ranch near Prescott, Ariz. It was a real show place, complete with a tennis court, a lake *and* a swimming pool. ("Imagine getting all this money for a little old cartoon!" remarked one of Jim's incredulous cowhands.) But it was a working ranch, too, with a couple hundred head of cattle. Jim Williams worked as hard as anybody on the place.

Jim sold the ranch in 1945, at the urging of his family, who preferred California. He was willing to admit, by then, that he wasn't making ranching pay. In fact, Jim is a natural soft touch. He probably has one of the largest collections of phony oil stock.

Out His Way

Jim Williams is now ensconced in a spacious Tudor mansion in ultra-respectable San Marino, just outside Los Angeles. Sometimes he's at work at his drawing board as early as six in the morning, wearing a moth-eaten, out-at-the-elbows, paint-spattered brown sweater, and looking pretty thoroughly out of place in his own heavily carpeted, paneled library.

Sometimes he sits at his drawing board all day long, smoking one cigarette after another, before he gets an idea for a cartoon; sometimes, on the other hand, he'll dredge half a dozen out of his memory and get them all drawn in a morning.

Then he heads straight for his shop in the garage, where he's always got some complicated project under way (a ship model, a piece of sculpture, a fancy doorstep, a garden fountain). This is a typical, cluttered shop—but there's one standard piece of equipment lacking; it hasn't got a single Williams cartoon on the wall. END

Up a Tree

Two old coon hunters were swapping tall stories about their dogs. "Why," said one of them, "I had a yaller hound once and every time just before I went hunting I'd whittle out a board in the shape of a coon-hide stretcher, just to show him the size of the one I wanted, then I'd set it outside where he could see it. Well, sir, one day my wife set the ironin' board outside and that critter ain't come back yet!" —*The Santa Fe Magazine.*

Copyrighted material

Binocular THREE-DIMENSIONAL STEREO-SCOPIC MICROSCOPE

$49.50 postpaid

Model X481—prized in a myriad of fascinating studies and professions, the stereoscopic microscope is among the most interesting and useful instruments ever devised by science. Prismatic construction allows 3-dimensional micro-study of metal parts, gems, ores, minerals, watches and instruments, biology specimens (dissecting). Equipped with 10X paired achromatic eyepieces, choice of 2X or 5X achromatic objective lenses. Rack and pinion adjustments, milk and clear sided mirrors. Removable hand rests, fitted hardwood cabinet. Performance never before possible under $150 ..... $49.50 ppd.

PAIRED EYEPIECES (4 SETS) $16.95 postpaid Four extra sets of paired achromatic eyepieces (total: 8) for above instrument. See below for powers obtainable.

Eyepiece power	5X	8X	10X*	12X	15X
Obj. power 2X	10X	16X	20X	24X	30X
Obj. power 5X	25X	40X	50X	60X	75X

*10X pair comes with instrument

MICROSCOPE LIGHT $7.95 Ppd.

Professional model, Universal joint connects chrome and barrel-type bakelite head to solid, heavy base. Chromed fittings. May be used clear or with two special glass filters, blue and green. Complete with bulb, cord, two filters at no extra charge.

100 200 300 POWER Triple Turret MICROSCOPE $14.95 Ppd.

Laboratory Model — The instrument that amazed biology instructors. Excellent optical qualities, adjustment, solid construction. A lifetime bargain for students, schools, labs, amateur researchers. **Anyone can now own one!** (Performance cannot be duplicated for $75.) Uses: animal, plant and mineral research Study plant cells, microscopic animal life, crystal structure. See the complex anatomy of tiny insects, larvae, eggs. An absolute necessity in hundreds of fascinating fields. Shipped in hardwood cabinet.

40 TO 600 POWER

15 Combinations! Professional MICROSCOPE $29.95 Ppd.

Model #635

At last! The FIRST instrument with this range of performance ever offered under $125. Every feature needed for advanced university, pre-med and medical school use. Triple revolving turret containing 10X, 20X and 40X achromatic objective lenses. Achromatic condenser, 6-aperture revolving iris. Two-side plano and concave substage mirrors. Solid base, excellent precision construction. Complete with fitted hardwood case. With 15X eyepiece (giving 150X, 300X & 600X) less mechanical stage.

SET OF EXTRA EYEPIECES $9.95 Ppd.

For above model #635 microscope. 4X, 5X, 8X, 12X interchangeable eyepieces in hardwood case, giving a total in all of 15 different powers from 40X to 600X. Complete set of 4 in case

MODEL #400 MECHANICAL STAGE $14.95 Ppd.

Shown on model #635 microscope. Made only for this instrument. This is an optional accessory which allows you to move the slide microscopically right, left, up or down without touching slide. This calibrated stage cannot be duplicated for less than $45 (If microscope is ordered without mechanical stage, we will fit your instrument with fine spring steel, clip-type slide holders.) Shipped in fitted hardwood case.

NAVY TYPE MARK XX

20 POWER TELESCOPE

$9.95 Ppd.

$30 value. Fine optically ground achromatic lenses, fully coated Same power as standard artillery observers spotting scope. Precision all metal construction Rust and salt spray resistant A valuable ship and boat owner's possession at a price everyone can afford Excellent scope for rifle range or hunting Shipped in choice of pigskin case or hardwood cabinet

UNIVERSAL SWIVEL HEAD

SURFACE MICROSCOPE $26.95 Ppd.

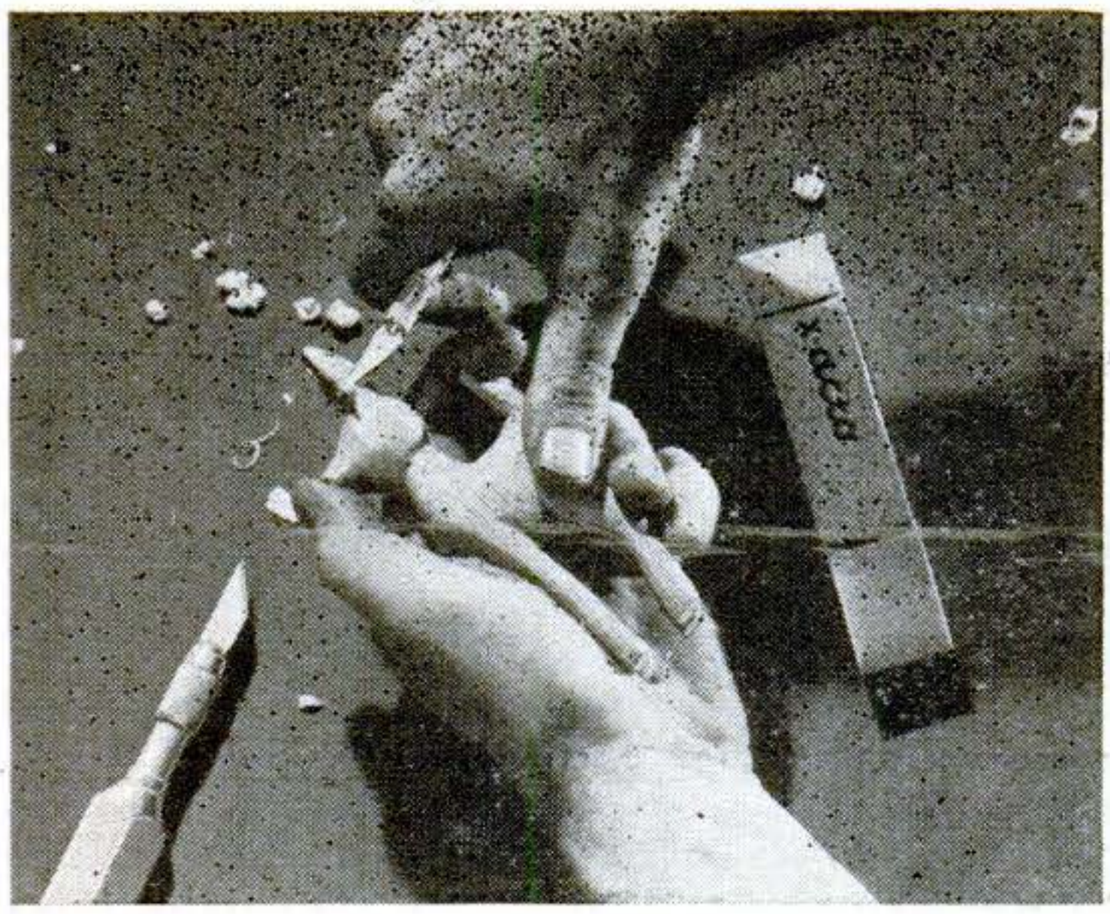
Model #630 — 4 eyepieces included: 5X, 10X, 20X, 30X. A beautiful finely made instrument for inspection of GEMS, CRYSTALS, ORES, MINERALS, METAL SURFACES, MACHINED PARTS, FABRICS, STAMPS, COINS, BIOLOGY SPECIMENS (dissecting), ENGRAVINGS. For WATCH and INSTRUMENT REPAIR. Plenty of room beneath lens for fine work of all kinds. Swivel head allows allover inspection without moving object. Micro-focus adjustment at rear. Complete with removable hand rests, hardwood case and interchangeable eyepieces. Two sided mirror: clear and milk side for anti-reflection. A $100 value

FREE CATALOG: WORLD'S GREATEST VALUES IN QUALITY OPTICS. MICROSCOPES, ACCESSORIES, PREPARED SLIDES, MAGNIFYING GLASSES, LOUPES, BINOCULARS, EVERY ITEM A BARGAIN! SENT ON REQUEST OR INCLUDED WITH YOUR ORDER.

MONEY-BACK 10-DAY GUARANTEE ON ALL ITEMS. SEND CHECK, CASH OR MONEY ORDER. 20% DEPOSIT REQUIRED ON ALL C.O.D.'S. CALIF. RESIDENTS ADD 3% STATE TAX

the AKRON 4400 SUNSET BLVD. LOS ANGELES 27, CALIF. OPTICAL DEPT. 9-S

Copyrighted material



make your *HANDS MORE CREATIVE* with x-acto Knives and Tools

Creative hands can be your greatest asset . . . X-acto knives and tools help the intelligent coordination of active minds and agile fingers . . . they can develop skill and dexterity in any art or handicraft you select.

Whether it's boat whittling, model airplanes, wood-carving, leathercraft, model railroads or any other handicraft, you can make *your* hands *more* creative with "designed-for-the-job" precision-engineered X-acto knives, tools and handicraft kits.

X-acto offers *the* complete line of handicraft knives, interchangeable blades, tools and attractive kits.

From 25¢ to $30.—at dealers everywhere.

No. 82
X-ACTO KNIFE CHEST
$4.20

X-acto ®

Send 15¢ to cover postage for our new illustrated 28-page Catalog.

X-acto Crescent Products Co., Inc.
440 Fourth Avenue, New York 16, New York

Lithium, the H-Bomb Metal

[*Continued from page 114*]

be recovered by decomposing the water with electric current.

Although lithium was discovered as early as 1817, by the Swedish chemist J. A. Arfvedson, only a few uses for its compounds were known until recent years. World War II spurred the development of many.

In submarines, the U. S. Navy found, lithium hydroxide purifies the air by absorbing carbon dioxide—the dry white powder is sprinkled over tarpaulins for this purpose. Alkaline-type storage batteries used in submarines and in mines employ an electrolyte containing the same compound.

Lithium hydride, like the metal itself, reacts with water to liberate hydrogen. In World War II, it made a convenient lightweight source of hydrogen for inflating observation balloons and radio-antenna-carrying balloons for life rafts.

You Drink It, Too

Many uses of lithium compounds, old and new, come closer to home. You drink lithium citrate and chloride in beverages, and may take other lithium compounds medically. Household air conditioners, as well as industrial types, now dehumidify the air with the aid of lithium bromide or lithium chloride. These salts have the remarkable power of extracting moisture from air, even when they are already dissolved in water to form a brine used as a spray.

Quite likely the gay colors on your glassware and pottery were put there with lithium-containing enamels and glazes, which offer a wide range of hues, including rich tones of blue and red. Porcelain enamel containing lithium is used on bathtubs and refrigerators, and has lately become the standard kind for kitchenware, giving superior gloss, resistance to heat shock, and freedom from staining. In varnish, a lithium compound serves as a "flattening agent."

Makes New Laundry Bleach

Combining soaplike lithium stearate with lubricating oil yields the "wonder" grease mentioned earlier. But if you combine lithium stearate with paraffin instead, you get a new family of useful waxes, with the desirable qualities of more expensive kinds.

Called "lithowaxes," these new materials show great promise for use in products as varied as cosmetic creams, phonograph rec-

[*Continued on page 254*]

Copyrighted material

weekend remodelers...

You too, can transform your floors and give them sparkling new beauty with these life-time *Hako Inexpensive Luxuries!* HAKO Vinylflex Plastic Floor Tile and HAKO Asphalt Floor Tile are extremely easy to install. Your HAKO dealer will help you decide on the type of floor you need and will furnish self-installation instructions or quote on an installed price.

look what you can do in YOUR home!

GREASE PROOF
QUIET UNDERFOOT
LESS WEAR — EASY CARE
13 BEAUTIFUL COLORS
COLOR THRU — NO BACKING

HAKO T.M.* Vinylflex PLASTIC FLOOR TILE

*Trade Mark Applied For

THE ALL PURPOSE PLASTIC FLOOR TILE

DOWNRIGHT DURABILITY
ECONOMICAL
29 COLORS
PARQUETRY DESIGN

HAKO Asphalt Tile

AN INEXPENSIVE LUXURY FOR FLOORS

SPARKLING COLORS
INEXPENSIVE TO INSTALL
POSITIVE WATERPROOF PROTECTION
DEEP BEVELED EDGES
EFFORTLESS TO CLEAN

HAKO Coronet ®

Guaranteed by Good Housekeeping

THE WATER-PROOF PLASTIC WALL TILE

SINCE 1903
HACHMEISTER-INC.
PITTSBURGH 13, PA.

HACHMEISTER-INC., Pittsburgh 13, Pa., DEPT. P.S. 1
Please send me illustrated literature and installation instruction booklets. Enclosed is 10c to cover cost of handling and mailing. I am interested in

☐ CORONET ☐ VINYLFLEX ☐ HAKO ASPHALT TILE

Name.....
Address.....
City.....Zone.....State.....

Coronet Title is designed for easy *self-modernization.* Coronet creates an amazing change in the appearance of bathrooms, kitchens and powder rooms. The water-proof flange on the wall side of Coronet makes it the ONE safe tile to use in tub recesses and shower stalls. Your HAKO dealer will help you select color and give you self-installation instructions or, if you prefer, install your Coronet at nominal cost.

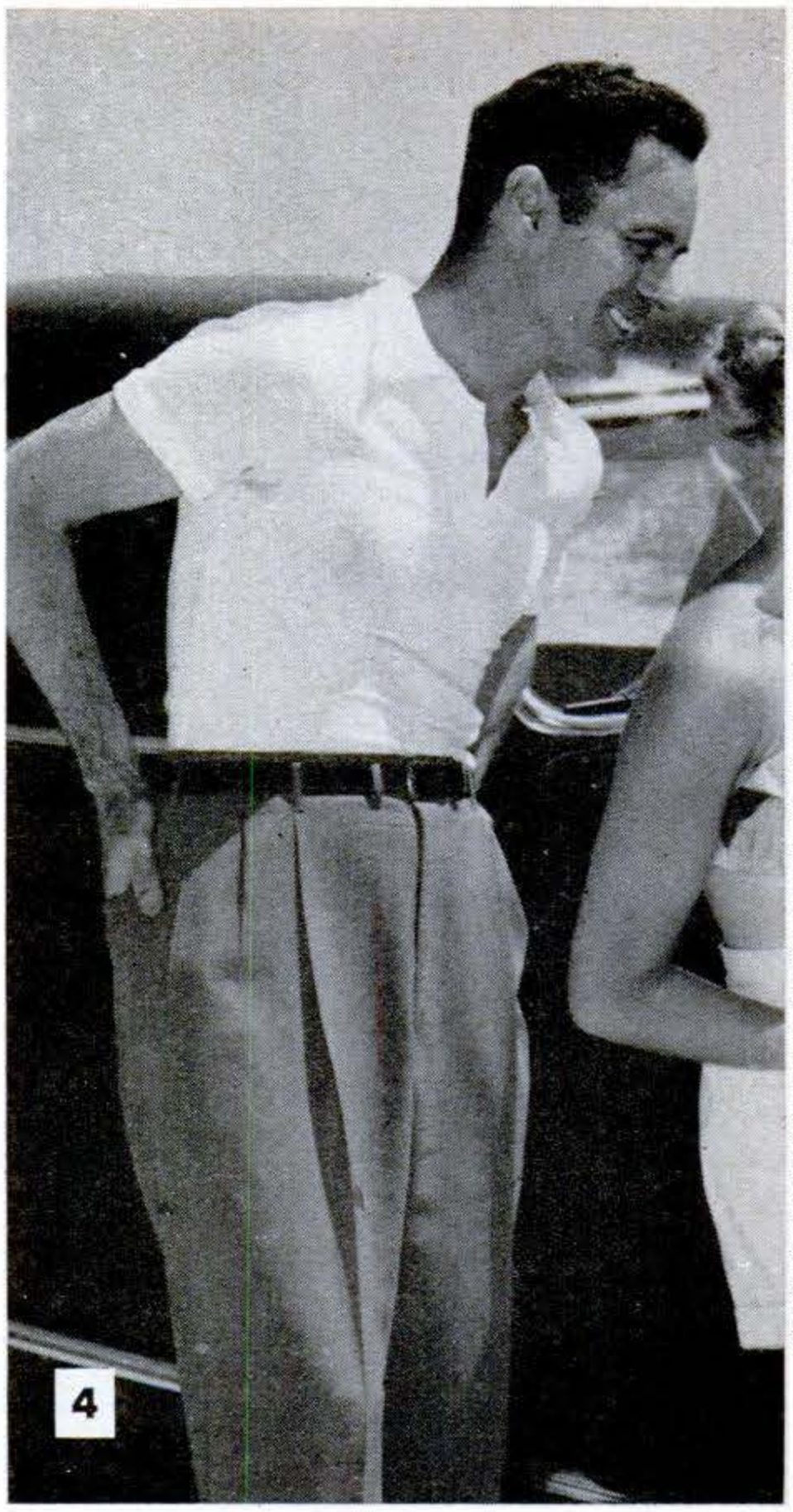
Copyrighted material

New car polish called Plasticote astounds car specialists

Photographer's model turns grime-covered car into glistening beauty in 37 minutes at cost of only 46 cents

PLASTICOTE with Kelvex is a liquid plastic, not a wax —can be applied in bright sunshine. Smooth, glass-like surface, resists dust and grime. Makes polish last longer.

"NO WASHING!"—she emphasizes as she rubs I C U PLASTICOTE on easily and quickly, adding, "It loosens dirt and grime as it deposits a plastic, glass-like coating on the car."



MODEL EXCLAIMS: "Beautiful, isn't it!" and points out PLASTICOTE'S three advantages over wax polishes —*One*, you don't need shade—*Two*, you don't have to wash your car—*Three*, you don't have to rub hard. I C U Plasticote cleans, coats, polishes, and protects in one easy operation.

TIME-JUDGE ANNOUNCES: "That took you just 16 minutes" as model smiles and accents the fact that there was no hard rubbing or great effort involved.

"FINISHED IN 37 MINUTES" announces the Judge. Model points out that she used just about ⅓ of a can of PLASTICOTE. Note: *Checking disclosed she used exactly 46 cents worth.*

This product is sold in California under the Trade Mark of **ICU AUTO POLISH**

Copyrighted material

"PLASTICOTE outsells all other polishes, bar none." *Warren's Amoco Service, Vero Beach, Fla.*

BRING BACK THAT NEW CAR LOOK! Get PLASTICOTE with Kelvex at your favorite filling station, auto supply store, or car dealer. If no dealer nearby, use this easy order coupon.

Enough for three cars $1.25. Keep your car beautifully polished for one whole year!

I.C.U. PRODUCTS OF THE LIVINGSTON COMPANY
150 Amity Road, New Haven 15, Conn.

PLEASE RUSH ☐ PINTS I.C.U. PLASTICOTE POSTPAID AT $1.25 PER PINT. I AM ENCLOSING $.....

☐ SEND ME FREE LITERATURE ON THE NEW I.C.U. PLASTICOTE.
SATISFACTION GUARANTEED OR MONEY BACK.

NAME.....

ADDRESS.....

CITY.....ZONE....STATE.....

Manufactured and distributed in Canada by Ewart-Harris Company, Verdun, P. Q.

Copyrighted material

The NEW Model 50 UTILITY TESTER
FOR REPAIRING ALL ELECTRICAL APPLIANCES-MOTORS
an all-around electrical trouble shooter

- Measures A.C. and D.C. Voltages, A.C. and D.C. Current, Resistances, etc.
- Will measure the current consumption while the appliance under test is in operation. The appliance or utility may be plugged directly into the front panel receptacle. A special pair of insulated clip-end leads is included for motors, etc.
- Incorporates a sensitive direct-reading resistance range which will accurately measure all resistances commonly used in electrical appliances, motors, etc. This range will enable continuity checks and tests for shorts and opens.
- Will test thermostats, radio tube filaments, bulbs, fuses, fluorescents, condensers, switches, field coils, circuit breakers, lighting systems, etc.

Handsome round cornered molded bakelite case 3⅛" x 5⅞" x 2¼". Complete with all test leads and instructions.

$13.90

SHIPPED ON APPROVAL
No Money With Order — No C.O.D.
Try it for 10 days before you buy. If completely satisfied send $3.90 and pay balance at rate of $2.00 per month for 5 months —No Interest or Carrying Charges Added. If not completely satisfied, return to us, no explanation necessary.
SUPERIOR ELECTRONIC CO., INC.
Dept. D-29 • 227 FULTON STREET • NEW YORK 7, N. Y.

FREE BOOK
Refinish, beautify, polish all woods. "101 Handy Hints." Send for today.

ARCHER • DANIELS • MIDLAND CO.
603 Roanoke Building, Minneapolis 2, Minn.

Lithium, the H-Bomb Metal

[Continued from page 250]

ords, crayons, wax paper, candles, polishing waxes and printing inks. One firm that makes lithium chemicals has successfully printed entire issues of its company magazine with ink containing a lithowax.

A year or so ago, the same company showed publicly for the first time a small watertight envelope of white powder beside a gallon jug of commercial liquid household bleach. The powder in the small envelope, lithium hypochlorite, had as much bleaching action as the big jugful of liquid. It is expected to be made available soon to housewives.

Flame Color Useful

New welding and soldering fluxes, especially suited for welding aluminum, employ lithium fluoride as an oxide scavenger and metal cleaner. Large transparent crystals of the same lithium compound are shaped into lenses and prisms for optical instruments and transmit a wider range of ultraviolet rays than any other substance known.

Recently developed "ferrite" magnetic materials, of which the television industry alone now uses 100 tons monthly, include a promising lithium-containing type called a lithium ferrospinel.

For many years, lithium compounds have been used in pyrotechnics for signal lights, imparting a characteristic carmine-red color.

Emphasizing official interest in discovering new sources of lithium, government geologists have joined in the hunt for it. And as this issue goes to press, word comes that the Defense Production Administration has set a production rate of 10,000,000 pounds a year of lithium compounds. Scheduled to be attained by the beginning of 1955, this expansion would multiply the output of the four years ending January, 1951, by as much as 2½ times. END

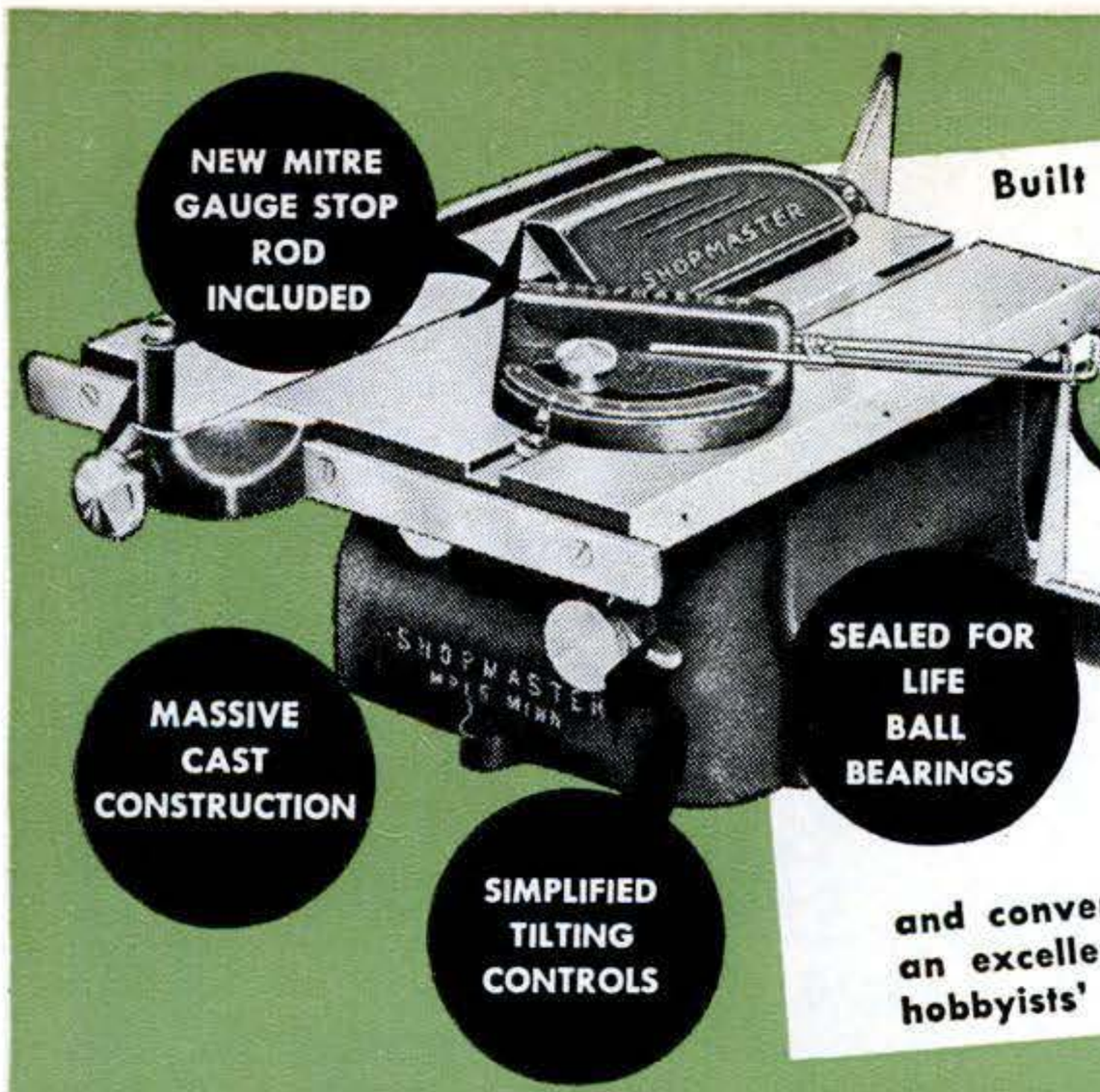
Juvenile Science in the Kitchen

A COUPLE called away by an emergency gave their son detailed instructions about cooking and cleaning. When Pa and Ma returned they found everything spotless except the big cooking kettle.

"Why didn't you wash the kettle?" asked Ma.

"Because," said the boy, "you always told me a washed pot never boils."—*Boston Globe.*

Copyrighted material



Built for economy-minded hobbyists who demand . . . QUALITY PLUS!

SHOPMASTER

8" TILTING ARBOR SAW

A new Shopmaster tool at a new low price. Durably constructed of rugged cast aluminum alloy with large table working surface. Has visible and convenient operating mechanism. It's an excellent all-around tool for the new hobbyists' workshop.

$49.95

Slightly lower Zone 1

FREE Complete catalog of the famous quality Shopmaster tools.

Other famous SHOPMASTER TOOLS

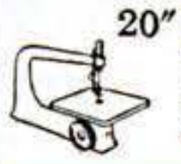
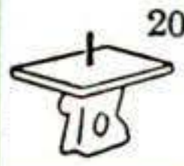

20" TILTING TABLE JIG SAW

TABLE SIZE SPINDLE SHAPER


20" TABLE SIZE SABER SAW

12" DRILL PRESS

BELT AND DISC SANDER

10" SWING WOOD TURNING LATHE

12" TILTING TABLE BAND SAW

10" TILTING ARBOR SAW

1214 THIRD ST. SOUTH • MINNEAPOLIS, MINNESOTA

YOUR CAR INVESTMENT IS BIGGER THAN EVER

Protect it with Miracle Power

Remember when a new automobile cost around $700? Today, your big investment—and the fact that world conditions indicate it may have to last—are reasons enough for taking care of it.

That's why mechanics and racers say, "Use Miracle Power in oil and gas". They know that oil alone can't protect modern engines against friction and DRY STARTING damage—major cause of engine wear. And oil can't lubricate upper cylinder areas effectively because it breaks down under terrific combustion chamber heat.

Miracle Power assures constant lubrication. It contains colloidal synthetic graphite in suspension. This lubricating graphite clings to metal . . . saves vital engine parts when oil is absent or ruptures . . . provides effective top cylinder lubrication because it keeps lubricating at "red hot" combustion chamber temperatures.

To save your car, use Miracle Power.

At gas stations, garages, Kaiser-Frazer, Ford and other car dealers or use this coupon for introductory offer.

Miracle Power Division
THE AP PARTS CORPORATION
859 AP BUILDING, Toledo 1, Ohio

THE AP PARTS CORPORATION
859 AP Building, Toledo 1, Ohio

Enclosed find $_____ for which please send me *postpaid:*

_____trial cans of Miracle Power at 75c each (1 for gas, 1 for oil)

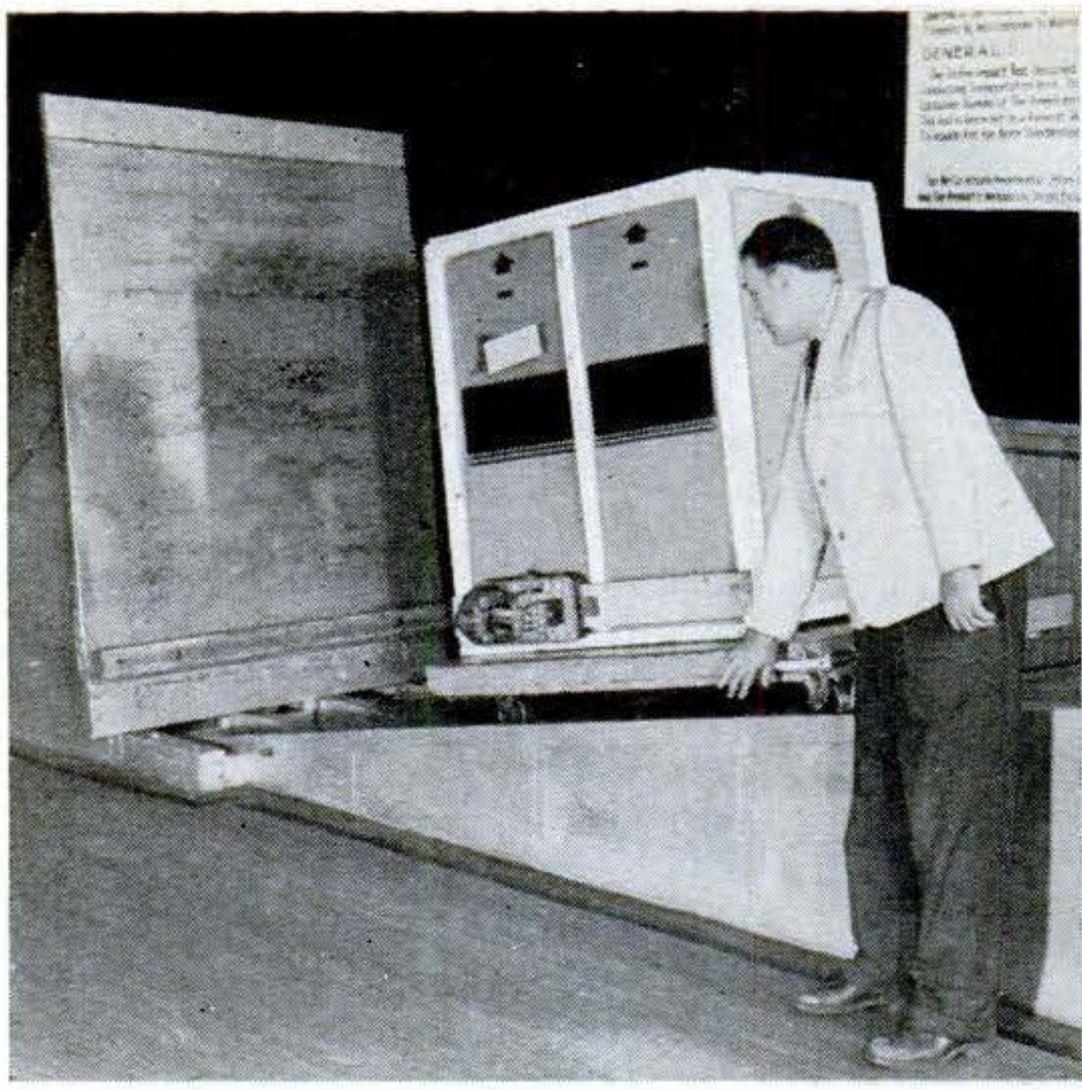
☐ Please send me free literature on making my car last longer.

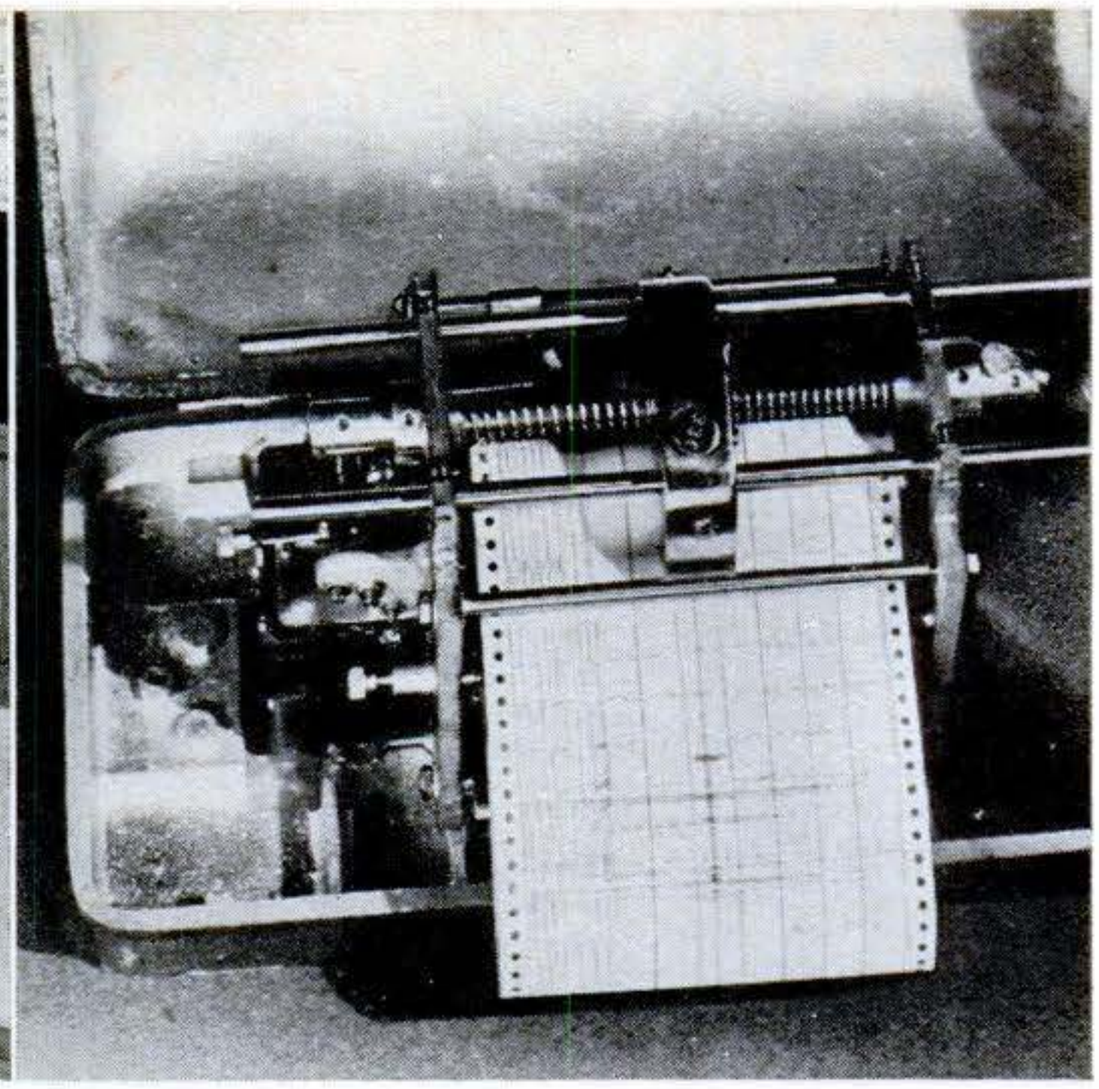
Name_____

Address_____

City_____ Zone_____ State_____

Copyrighted material





Rough Rides Show How Much Crates Can Take

CRATED refrigerators, stoves, and other products are really taken over the bumps at the Porcelain Enamel Institute, at Washington. D. C. They ride a mechanical obstacle course to find out how packaging will stand up under a real journey by truck and rail. Undergoing an impact test, a crate, above left, is pulled on a dolly up an incline to a predetermined point where it will be released and allowed to roll back and slam into the bumper at the bottom. Attached to the lower left-hand corner of the crate is a shock recorder, shown close up at right above, that measures the amount of impact.

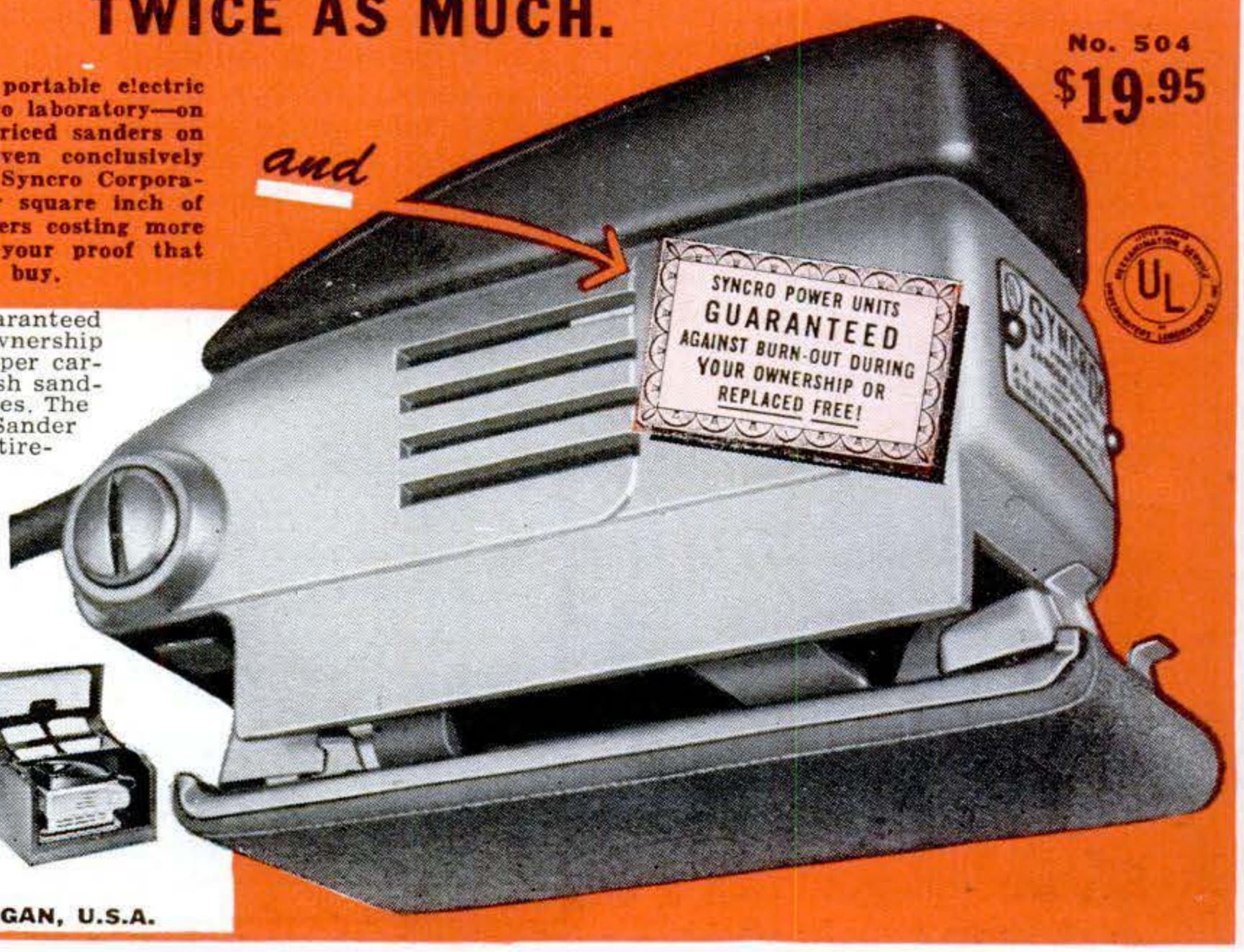
Amazing Tests Prove...

SYNCRO SANDERS DO MORE WORK PER SQUARE INCH OF SANDING PAD SURFACE THAN SANDERS COSTING TWICE AS MUCH.

In material removal tests for portable electric sanders conducted in the Syncro laboratory—on most of the leading, medium priced sanders on the market today—it was proven conclusively that sanders manufactured by Syncro Corporation remove more material per square inch of sanding pad surface than sanders costing more than twice as much. This is your proof that Syncro Sanders are your best buy.

and

No. 504
$19.95



Syncro Power Units are guaranteed against burn out all during ownership or replaced Free! Platen or paper carrier is designed to do ALL finish sanding . . not just large flat surfaces. The light weight of the Syncro Sander makes it ideal, and much less tiresome for vertical sanding use. Perfect for smoothing seams on dry walls. NOT an orbital **type sander.** Buy Syncro at hardwares or postpaid, complete: **$19.95.**

No. 504-D in METAL CASE
Sturdy 9"x5" metal case holds "504-D", 10 sandpapers, polish pads, cord. At Hardwares or postpaid **$22.95**

QUALITY SANDERS By
SYNCRO
CORPORATION
DEPT. G-92, OXFORD, MICHIGAN, U.S.A.

Copyrighted material

SURPLUS MACHINE SHOP TOOLS AT PRICES YOU CAN AFFORD

NEW HIGH SPEED SMALL DRILLS

Sizes available—letter size C, fraction size 3/16", number sizes 2, 5, 10, 12, 13, 18, 40 & 50. 12 of any one size, doz. **$2.15**

12, any mixture of your selection of above sizes ..... doz. **$2.35**

NOTE: Min. order, 1 doz. Large quan. available at further discounts.

SET 7E 12 different size H. S. straight shank Drills. 1/4" to 1/2", lengths up to 7". Only..... **$3.98**

HIGH SPEED DRILLS

1/2" TO 1-3/16" WITH 1/2" SHANKS!

SET 35E 6 different size H. S. Drills, 1/4" to 17/32" all with 1/4" shanks. PPD..... **$2.98**

SET 36E 10 of above, PPD..... **$4.95**

Sets 35E and 36E will fit any 1/4" drill.

HIGH SPEED DRILLS

1/2" to 1-3/16" WITH 1/2" SHANKS!

5 Drills for less than the price of one new Drill!

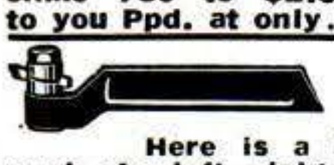
SET 32E 5 different size H. S. Drills 1/2" to 1-3/16"..... **$7.95**

SET 33E 10 different size H. S. Drills 1/2" to 1-3/16".. **$14.50**

These new and used H. S. precision Drills with 1/2" shanks can be used in a 1/2" elec. drill or a 1/2" capacity lathe or drill press.

NEW HIGH SPEED COMBINATION DRILL AND COUNTERSINKS

SET 2E 8 selected sizes from A1 to F2 (3/64" drill x 1/8" body to 3/16" drill x 7/16" body) 60° angle of countersink. New cost on these countersinks 75c to $2.50 ea. Priced to you Ppd. at only..... **$3.98**



NEW 360° SWIVEL TYPE TOOL HOLDER & BORING BAR

Here is a tool that will do the work of a left, right and straight tool holder, plus a boring bar, all for a fraction of its original cost. PPD to you.

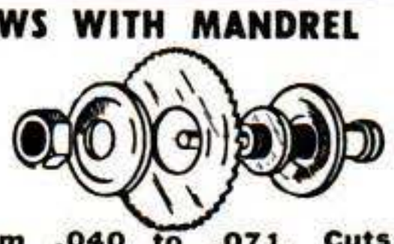
TOOL A takes a 5/16" sq. bit or 5/16" dia. boring tool. Shank size 9/16"x1"x4 3/4". PPD. Only..... **$3.29**

TOOL B takes a 3/8" sq. bit or 3/8" dia. boring tool. Shank size 5/8"x 1-3/16"x5 3/4". PPD. Only..... **$3.95**

TOOL C. Cut-off blade holder for 3/32"x3/8" blade. Shank size 1/2"x1"x4 1/2" (can be changed to fit other size cut-off blades). PPD. Only..... **$2.25**

TOOL BIT SPECIAL: 12 H. S. 3/16" sq. x 2 1/2" new tool bits. PPD..... **$1.95**

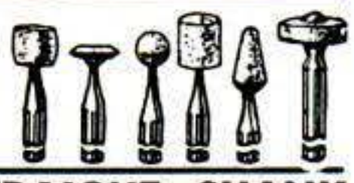
6 SLITTING SAWS WITH MANDREL



SET 34E 6 Different Size High Speed Slitting Saws, 5 pcs. 2 3/4" dia. x 1" arbor, plus 1 pc. 5" dia. x 1/2" arbor—thickness from .040 to .071. Cuts wood, aluminum, brass, steel, etc. PLUS SPECIAL MANDREL which enables use of saws in 1/4" or 1/2" elec. drill. $25 value. PPD. Only..... **$4.95**

7 selected, sharp H. S. Slitting Saws as above to use on your own mandrel or milling machine. New and used. PPD. A bargain at..... **$4.95**

100 MOUNTED POINTS



SET 21E 1/8 and 3/32 shanks, assorted shapes and sizes..... **$8.98**

HIGH SPEED STRAIGHT SHANK CHUCKING REAMERS

SET 16E 20 Different Size High Speed Straight Shank Chucking Reamers up to 1/2". New and used. Priced at only..... **$7.95**

SET 18E 15 Different Size High Speed Straight Shank Chucking Reamers from 1/4" to 1". New and used. Priced at only **$7.95**

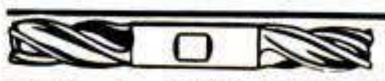
NEW ROTARY FILE MIX

7 different pcs., High Speed 1/4" shank, PPD. . **$4.49**

SET 22E 14 different pcs. as above, PPD. **$8.79**

HIGH SPEED WOODRUFF KEY SEAT CUTTER

SET 4E 5 different size cutters. Can be used as mounted milling cutter or circular saw. All with 3/8" and 1/2" shanks, widths up to 1/4", dia. up to 1". New and used. Ppd. Priced at only.... **$3.95**

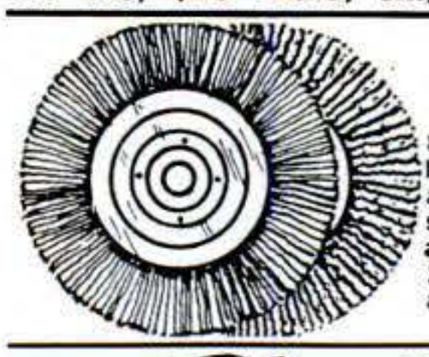


DOUBLE-END END MILLS

SET 29E 4 right hand H. S., 3/8" straight shank End Mills up to 3/8" dia. **$3.98**

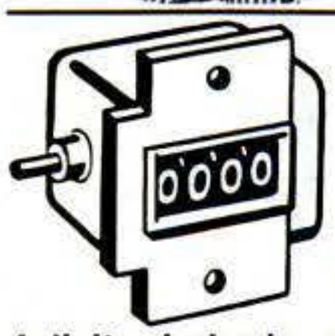
New Carbide Tip Masonry Drills

Carbide tip goes through any masonry. Set of 5 bits containing two 7/32"; three 1/4". All five, $10 Value, only..... **$2.75**



NEW WIRE WHEELS

8" dia. x 5/8" arbor—arbor adjustable to larger sizes. One coarse and one fine. These 2 pieces at only **$2.29**



NEW VEEDER ROOT COUNTERS

(non-reset type)

A counter for punch presses, motor RPM, gadget experimentation, etc. 3 digit, clock-wise rotation type..... **$1.49**

4-digit, clock-wise rotation type ...$1.89
5-digit, clock-wise rotation type ...$2.49
5-digit, rachet type $2.89

60 TO 1 GEAR BOX

5/16" dia. input shaft, 1/2" dia. output shaft with removable sprocket. Wt. 6 lbs. PPD. **$6.49**

PESCO HYDRAULIC GEAR TYPE PUMP

Rated at 3 GPM, 3750 RPM, 1500 PSI. 1/2" drive spline. Gov't cost over $90. Yours for only..... **$9.49**

BARGAIN TOOL & SHOP MIXES—PPD!

- 30 GRINDING WHEELS—1/4" arbor, 4" dia. max. **$3.29**
- 12 FILES up to 12" length, a buy at **$3.49**
- 8 H. S. TAPS Std. & pipe up to 5/8" **$2.95**
- LARGE HAND REAMER MIX: 10 different sizes—15/16" to 1 3/4", all new, WT. 37 lbs. A fraction of new cost, F.O.B. Tulsa **$22.50**

SURPRISE MIX: Over 50 pcs. for your 1/4" elec. drill including rotary files, drills, bits, reamers, grinding wheels and arbors for our customers who like pleasant surprises. Your money back if you aren't satisfied..... **$2.98**

Money-Back Guarantee—All Mdse. Mixture of New and Reconditioned Unless Specified New. All items (unless marked PPD) will be shipped F.O.B. Tulsa.

Write For Free Catalog Describing Thousands of Bargain Cutting Tools.

T & T TOOL 221 W. SECOND TULSA, OKLA.

HOBART "all 'round" WELDING...gets BIG PAYING jobs!

Go anywhere with trailer type gas drive welder

Don't let opportunity pass you by! Set up your own welding shop—get in on one of today's fastest growing, biggest paying businesses. Opportunities are unlimited.

Have your own BIG PAYING business

Hobart "simplified" welding makes learning easy, yet gives you an all 'round welder of top performance and dependability. Write for free booklet "Better Welds."

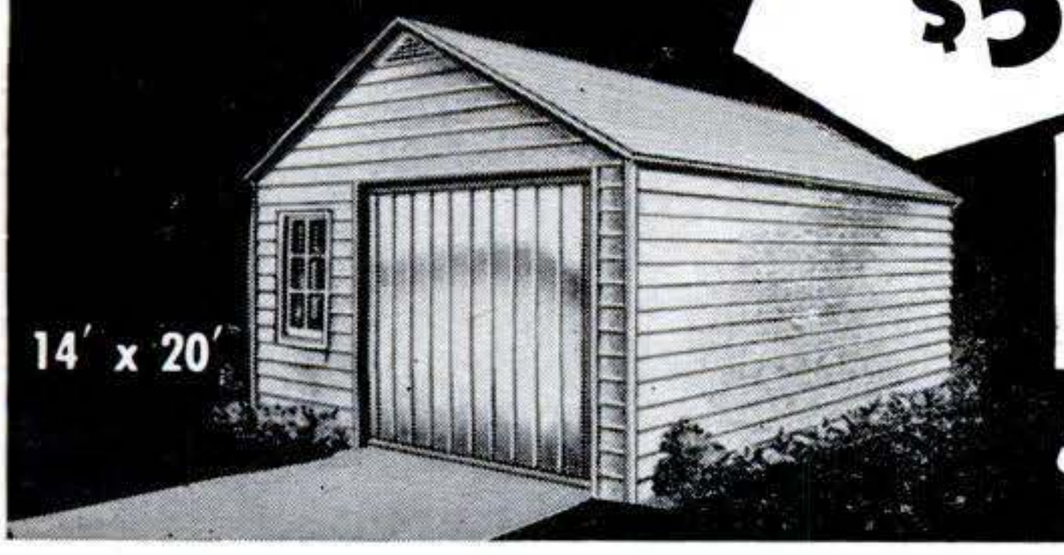
Build a GOOD business reputation with

Write today! **HOBART BROTHERS CO., BOX P-92, TROY, OHIO**

HOBART WELDERS

GIVE YOUR CAR A LIFETIME OF PROTECTION...

For less than $500.00



14' x 20'

Erect this all-aluminum 1½ car garage yourself in just one day. Delivered complete with beautiful 6" embossed aluminum siding and roof. Overhead door, hardware and nails plus screened louvers. Factory-cut framing members of clean, white kilndried lumber. Fire-resistant, rodent, rust and weather proof. Acceptable for FHA financing. Plenty of room for your car plus space for toys and garden tools. Dept. O.

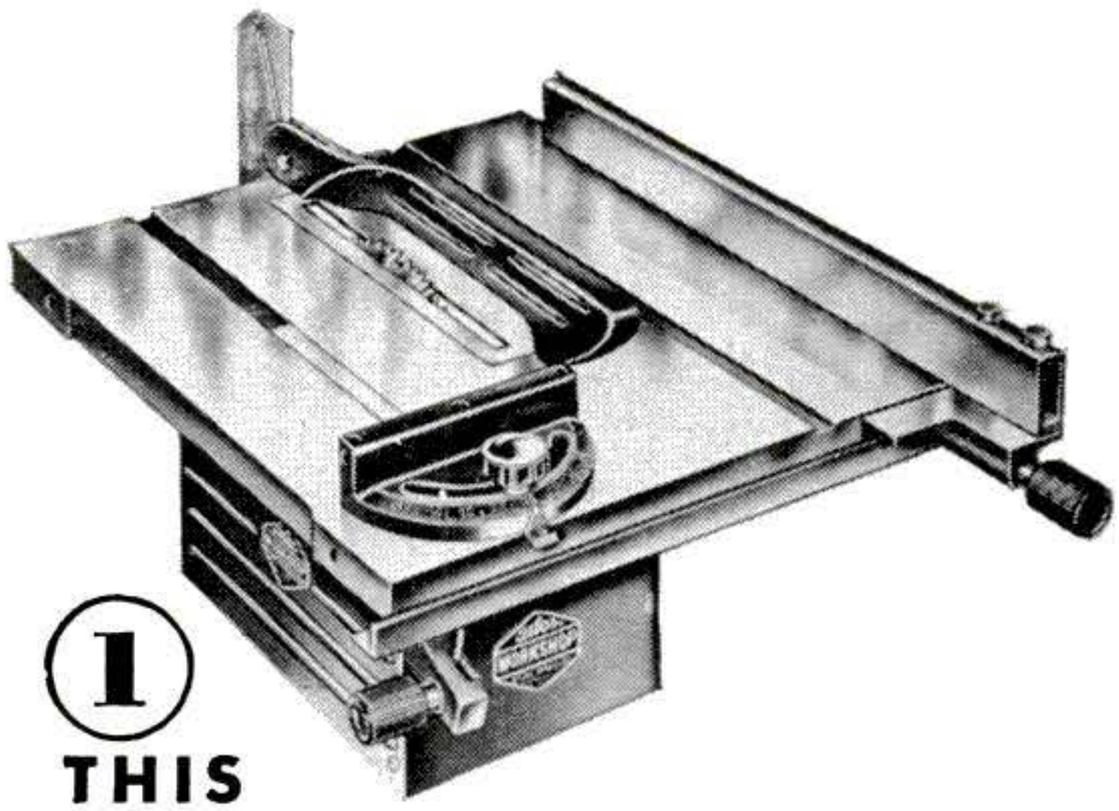
Send for our circular on 1, 1½ and 2 car garages

SWIFT HOMES, INC.
ELIZABETH, PA.

SOME DEALERSHIPS STILL OPEN

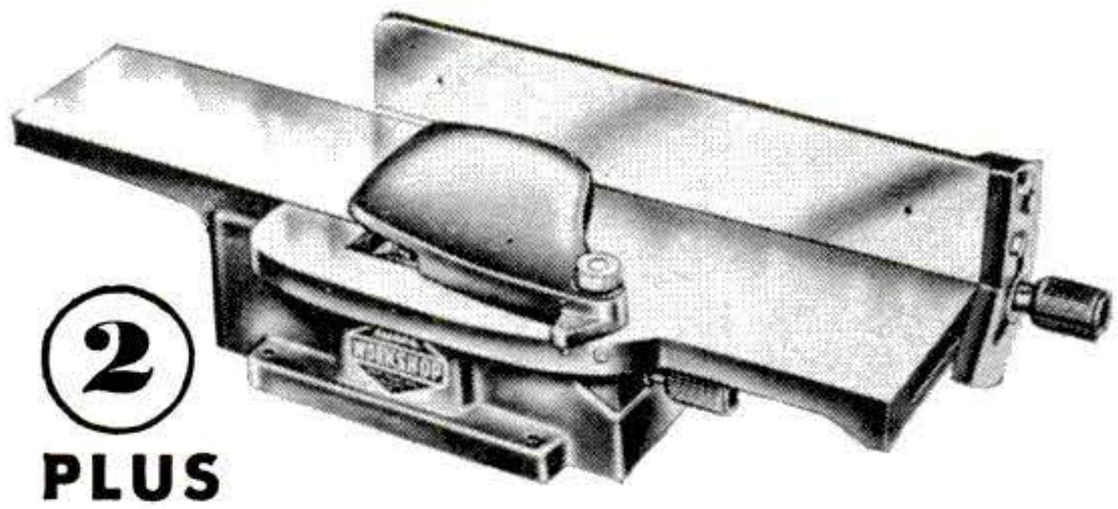
Copyrighted material

GREATEST TOOL TEAM VALUE EVER OFFERED!



1 THIS

WORKSHOP 8" SAW



2 PLUS THIS

WORKSHOP 4" JOINTER

The 2 Tools Most Men Buy First!

Both for ONLY $52.50!

A good saw and jointer-planer are the tools most men buy first — *because they are the basic tools needed for building household equipment, remodeling and repairing.* Now you can buy both these 2 great tools for the almost unheard of low price of *just $52.50!* This team handles all your straight, angle, and double-angle sawing, plus all edging, truing, and surfacing operations — does them faster, easier, and more accurately than you could ever do them by hand. You'll save money from the start on shelves, cupboards, cabinets, scores of furniture and home repair projects. See these sensational tool values at your dealer's. Or send a postcard for a catalog today!

(PRICE IS F.O.B., KALAMAZOO, MICH.)

ATLAS PRESS COMPANY

825 North Pitcher Street, Kalamazoo, Michigan

Atlas DEPENDABLE QUALITY TOOLS SINCE 1911

TV Tricks Take You Space Traveling

[*Continued from page 108*]

ing more than a baby alligator. With a crest of paper spines taped to its back, it was placed on a sloping sheet of glass. The camera shot a relatively big image. Blended with a picture from another camera shooting over the pilot's shoulder, this produced as neat a visual nightmare as any TV addict could ask.

We haven't invented a tractor beam yet, but some invaders from space used one in *Out There*. An invisible beam swept across earth like a controlled cyclone, sucking animals, trees, soil and houses into the air. Producer John Haggott had a miniature landscape built with a trench running through it. The bottom of the trench was covered with screening, and the trench filled with chopped cork. Miniature houses, trees, and animals were placed over this. When a CBS prop man moved an air jet under the trench, things flew skyward.

A Lobsterscope Is a Glockamora

Space ships in the same show were big cardboard Easter eggs, suitably painted and fitted with eyelets to slide down taut wires strung before a black backdrop. Inverted by a prism before the camera lens, the picture showed the ships shooting up. When attacked by Earth's defenders, they obligingly exploded. Flashlight powder and a tiny detonator in each did the trick.

The effect of light from rocket blasts, or of shimmering reflections from water, is produced by rotating a perforated disk in front of a spotlight. Called a lobsterscope in ABC studios, it's the glockamora to CBS.

But tell the kids that dinosaurs are only eight inches long, that boiling mud is the same stuff mother serves for breakfast, and they'll only nod before turning back to the show. Because in science-fiction TV, it's fun to be fooled.—*Harry Walton.*

Why Waste the Aroma?

VISITING a professor recently, we noticed a lighted Bunsen burner under a tripod on which a cigar butt was perched. There was little but ash left, and we remarked that the "lighter" had done too good a job. "Oh, that," said the professor. "I like to smoke cigars until they start to taste bad. Then I put them on the tripod for the burner to finish because I like to smell the smoke."—*Chemical and Engineering News.*

How to clean CARBURETORS "on-the-engine"

A lot of time and money is wasted checking timing, adjusting spark plugs, replacing points—even making major replacements—in an effort to correct engine troubles curable only by carburetor cleaning.

Today, there is no excuse for neglecting this all-important job. With GUMOUT, you can clean the carburetor of all dirt, muck, moisture, gum, and varnish in less than twenty minutes. It's easy to do the job *right on the engine.*

Keep your engine tuned to perfection . . . get peak performance and save gasoline. Clean your carburetor at the first sign of engine trouble; with every tune-up; at least twice a year.

(1) Disconnect fuel line.

(2) Use the "GUMOUTER" to feed GUMOUT into the carburetor

(3) Reconnect fuel line.

Get GUMOUT from your favorite dealer today. Or use the coupon to order direct. A copy of the valuable *Carburetor Handbook* is yours for the asking.

GUMOUT DIVISION, ***Pennsylvania Refining Co.***
2686 Lisbon Road, Cleveland 4, Ohio

Please send: P-9-2

____ Pints of GUMOUT @ $1.50
____ GUMOUTER @ 4.75
____ Carburetor Handbook *free*

Name_____
Address_____
City_____ Zone_____ State_____

Favorite of home owners and craftsmen for 20 years! SPEEDY SPRAYER gives your work that professional paint finish everyone admires. Sprays paint, enamel, varnish, lacquer, etc. . . . 4 to 7 times faster than hand brushing! Lightweight, portable, uses any ¼ H.P. motor. Improved diaphragm principle assures clean, oil-free air. You'll find dozens of time and money saving uses for SPEEDY SPRAYER, including spraying insecticides 2-4-D and DDT. Complete outfit, without motor, only $32.50.

At leading hardware, lumber, and auto supply dealers.
FREE—*write for handy booklet "How to Spray."*

W. R. BROWN CORPORATION
2637 N. Normandy Ave. • Chicago 39, Ill.

The thousands upon thousands of men who use precision tools will tell you that there are none better than Lufkin. For measurements that are accurate use Lufkin precision tools. See the complete line of Lufkin tapes, rules, and precision tools at your hardware or tool store.

191

BUY LUFKIN TAPES • RULES • PRECISION TOOLS at your hardware or tool store

THE LUFKIN RULE CO., SAGINAW, MICHIGAN
132-138 Lafayette St., New York City • Barrie, Ont.

THE LUFKIN RULE CO., Dept. PS, Saginaw, Michigan
Please send me the fascinating booklet, "The Amazing Story of Measurement." Enclosed find 10¢ (no stamps) to cover handling and mailing.

NAME_____
ADDRESS_____
CITY_____ STATE_____

Copyrighted material

UTICA

FORGES FOR STRENGTH

UTICA'S NEW RIB-JOINT® PLIERS

#507-10"

Greater strength exactly where you need it—at the joint—because ribs are *forged*. No machining to weaken the steel's fibre structure.

LOOK FOR THE NAME "UTICA" ON THE TOOL

UTICA®

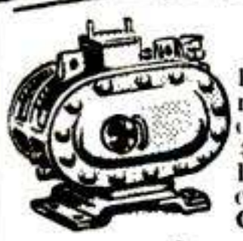
DROP FORGE AND TOOL CORPORATION

UTICA 4, NEW YORK

IT PAYS TO BUY QUALITY TOOLS

and the world's best tools are made in U.S.A.

WAR SURPLUS BARGAINS



HOT ROD SUPERCHARGER

Extra soup and go at a price you can't afford to miss! Mfr'd by Borg-Warner. Specifications: 7½" deep, 7" high. Wgt. 17 lbs. Compact and sturdy. 4 base mounting holes. ¾" outlet, ⅝" shaft with female Lovejoy coupling. Priced today at $85. Our special SALE PRICE **$31.00**

ALARM HORNS

and Sirens. 110 v. AC motor driven. Heavy duty with long life and adjustable tone high, med. and low. List $47. NEW **$19.95**

TWIN-DISC CLUTCH

Throw-out type for gas engines & electric motors ¾ to 15 HP; 1-7/16" shaft bore—can be bushed to suit. Length 4". Lists at $44. Used like new **$15.95**

LIGHT PLANTS

300 Watt 110-220 volt AC. Wgt. 40 lbs—portable **$99.**
750-1000 Watt, 110 v. AC. Briggs & Str'n eng. **$169.**
1000-1200 Watt 110 v. AC. only **$194**
2500-3000 Watt 110 v. AC. Slow speed (1800 r.p.m.) Leland generator for longer life. Recond'nd and fully guaranteed **$295.**
NEW ..... **$345.**
Plants built in 1951 with tools and spare parts. **$426.**
5000 Watt 120 v. AC 4 cyl. gas engine. Hobart generator. List $1800. NEW **$795.**
Complete with spare parts, 2 reels of cable and tools $895

WINCHES

Hand winch, 3-1 ratio, 600 lb. pull, drum takes 75' of 3/16" cable, stop locking paw, wgt. 26 lbs..... **$16.95**
Ball bearing hand winch, low ratio 1-1, high 3-1, 600 lb. pull..... **$29.50**
2 speed model, 1-1 & 12-1 ratios thru worm gear. Hand brake..... **$39.50**
½ HP electric ball bearing model. Power controlled by brake; drum speed 12 rpm **$135.00**
¾ HP, 3" drum..... **$165.00**
Heavy duty 10-1 ratio double drum model. Wgt. 280 lbs..... **$49.95**

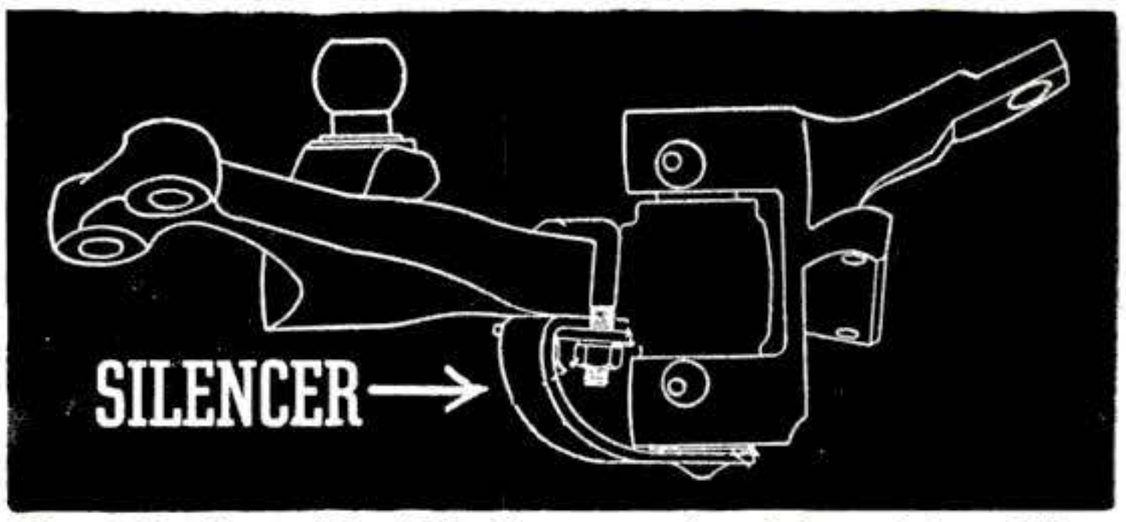
RUBBER HOSE

GOODRICH 2 ply 2" I. D. 25 ft. lengths worth $25.00. Only **$4.95**
3 lengths for $12.00.

Write today for free catalog. Thousands of $$ saving buys.

C&H ELECTRIC MACHINE Co. Inc.
438j W Juneau Ave., Milwaukee 3, Wisconsin

OWNERS CHEVROLETS 1949 THRU 1952



Stop that costly third arm rebushing job with a HAWLEY SILENCER. GUARANTEED TO STOP RATTLES AT THIS POINT, IMPROVE STEERING, LESSEN TIRE WEAR. Install it yourself according to directions, a three minute job. If not entirely satisfied return in ten days, your money will be refunded. Price **$3.85** Postage Paid. No C.O.D. Please.

M. E. SIMPSON MANUFACTURER, MEIGS, GA.

MODERN

LAWN MOWER SHARPENER

Service departments of leading Lawn Mower manufacturers use the Modern Lawn Mower Sharpener. One lever moves lawn mower into grinding position. Gasoline and oil remain in engine while sharpening, no dismantling of wheels, roller or handle. The Modern is a precision bed knife grinder—no extra grinder to buy. Imitated but never equaled—Compare before you buy.

If it isn't a Modern it can't be Modern

(Prices subject to change without notice)

WRITE FOR FREE BOOKLET 11D

$263.00 with motor F.O.B. PASADENA

MODERN MFG. CO.
160 N. Fair Oaks - Pasadena 1, Calif.

NEW! CHEAP! OIL BURNER

SWEEPING THE COUNTRY!

SALESMEN BIG MONEY

SLIPS INTO ANY COAL RANGE, STOVE OR FURNACE

Amazing quick, intense heat. By finger-tip control. Cheaper than coal. No more shoveling coal or ashes. SENT ON TRIAL. Prove it pays for itself quickly by what it saves. $1 bonus for testing. We'll let you try one in your own home for one month. Write for details today. **NORTHWEST MFG. CO., 361-L Main, Mitchell, S. Dak.**

FILE SAWS THE RIGHT WAY

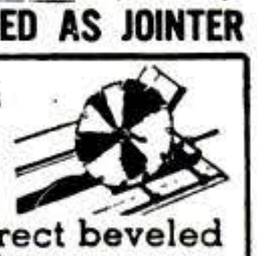
SO EASY to joint and file saws like new. 2 hardened steel rollers keep teeth same height. All teeth cut, saw runs true and smooth . . **$2.95**

SUPER DRILL GRINDER

Sharpens round shank drills 3/32 to ½", 6" long. Grinds old drills like new in 4 different point angles, using hand, power grinders . **$2.95**

At dealers or postpaid
FREE FOLDERS

GRIND all circle saws 6 to 10" with correct beveled wheel. Fits your saw table **$8.95**



TRU-CIRCLE Saw Set — Automatically sets teeth 10° or more **$2.95**

A. D. McBURNEY 317 E. 4th St., Los Angeles 14, Calif. Dept. S-21

Copyrighted material

WAR SURPLUS SPECIALS

ALL BRAND NEW—UNCONDITIONALLY GUARANTEED

GENERATING PLANTS

FROM 350 WATTS TO 25 KVA
Item #183—3000 to 4000 WATT GENERATOR SET

ITEM #183

FEATURES — Power for your home or business. Simply connect to power panel or house circuit. ● Constant voltage regardless of load. ● Push button start or stop. ● Easily made full automatic start or stop. ● **SPECIFICATIONS**—Sizes 19"x30"x48". Steel skids, weatherproof housing, requires no building. Wt. 725 lbs. ● Hercules 4-cyl. 10 HP gasoline engine. Load governor. Oil filter. Quiet muffler. 6-volt starter, generator. ● Hobart 115 volt, 60 cycle, 3,000 to 4,000-watt generator. Furnishes either single or three-phase power, 2 or 3 wire. ● Panel contains oil gauge, voltmeter, ammeter, circuit breaker, voltage regulator, start button. Today's Cost Over $1,200.00. SALE PRICE F.O.B. Chicago **465.00**

BRAND NEW

(ITEM #130)

General Motors—Allison

CENTRIFUGAL PUMP

200 GALLONS PER MINUTE

● For Draining Basements ● Fire-Fighting ● Irrigation ● Fuel Transfer ● Swimming Pools ● Home Water Systems ● Dewatering

This General Motors-Allison Centrifugal Pump—designed for use on U.S. Air Force Mustang Fighters, now converted for commercial, home, and industrial high volume pumping applications. Inlet, 2½" standard pipe thread, twin outlets with 1¼" pipe thread, ball bearing supported ¾" shaft. Easy, fast simple priming. Rotation, counterclockwise facing shaft. Shipping wt. 35 lbs. Gov't acq. cost $145.00. F.O.B. Chicago. **NOW ONLY** **39.50**

HYDRAULIC SPEED REDUCER

WITH FINGERTIP CONTROL

Item #115

USE FOR: ● Reamer Drives ● Midget Cars ● Feed Mills ● Canning Machines ● Conveyors ● Lathes ● Milling Machines ● Motor Boats ● Cream Separators ● Garden Tractors ● Pumps

Variable output speeds from 0 to input speed available by moving control handle. Locking handle maintains setting. Use input power of ¼ to 1½ H.P. This Westinghouse-Oil Gear Unit consists of a variable displacement hydraulic pump feeding a fixed displacement hydraulic motor. Adjustable relief valves set at factory for 100 inch pounds of torque may be reset up to 180 inch pounds. Independent reverse control allows full output power and speed selection in either direction of rotation. Shafts measure ⅝" diam. include keyway. Input rotation is counterclockwise facing shaft. Recommended input speed not to exceed 750 R.P.M. Over-all dimensions, 7½"x7½"x 11½". Gov't. acquisition cost, $428.00. Ship. wt. 31 lbs. Complete with 2 qts. of oil and full instructions. F.O.B. Chicago **54.50**

Aircraft Quality HYDRAULIC EQUIPMENT

Item #126

ITEM #160—PESCO GEAR TYPE HYDRAULIC PUMP—Compact—Powerful—Reliable. Especially designed for belt drive from fan belt, power take-off, drive pulley, electric motor or small gas engine. Equally suitable for direct coupling. Pedestal type mounting with two bolt holes for ⅜" hold-down bolts. Standard ½" pipe thread inlet and outlet ports. Delivers 4.5 GPM at 1000 PSI at 2800 RPM with 3 HP. Will actuate one Item #6, 3" bore, 24" stroke cylinder in 10 seconds. Hardened steel gears turn in dense oilite bronze bearings. Rotation—clockwise facing shaft. Guaranteed trouble-free service. Ship. wt. 6 lbs. F.O.B. Chicago. **22.50**

Item #160

ITEM #126—Four-way, open center control valve with built in adjustable relief valve. Factory set at 1000 P.S.I., spring loaded neutral position, for use with one double acting cylinder. In neutral position cylinder is locked and pump unloaded. Fully balanced plunger type, smooth, positive, easy operation, can be used as single unit or mounted in series of any combinations desired. Has ¾" pipe thread inlet and outlet, ½" pipe thread cylinder ports. Newly manufactured to our specifications. Shipping weight 8¼ lbs. An outstanding Buy! F.O.B. Chicago..... **21.50**

ITEM #42—Double action hydraulic cylinder, 4" bore, 18" stroke. Rated lift capacity with 1000 PSI line pressure is 12,500 lbs. Ship. wt. 30 lbs. F.O.B. Chicago. An Excellent Buy for... **32.50**

NEW MODEL 353—DUAL RANGE

D. C. ARC WELDER

for Stationary or Portable Use. Heavy DUTY RANGE TO 250 AMPS. NEW 'MAGIC TERMINAL' FOR LOW CURRENT 30 TO 100 AMPS. IDEAL FOR ● FARM ● FACTORY ● GARAGE ● WORKSHOP

Welds Anything From Auto Fenders To Tractor Frames

These precision engineered D.C. Arc Welders contain the highest quality War Surplus aircraft components built to exacting government specifications. They are light in weight, have over-sized lifetime grease-sealed ball bearings, air cooled commutator, dial type rheostat for easy pin-point control, a high-low rheostat switch, reactor coil for even arc and the new 'MAGIC TERMINAL' low current welding range for welding lighter materials. Designed for many years of trouble-free service. Run welder from drive pulley or power take off of a tractor or Jeep, 7½ HP electric motor or 10 HP gas engine at 2500 R.P.M. Uses two V-belts or flat belt. Continuous output rating 200 amps. Intermittent welding rating 250 amps. 30 volts. This sensational price includes double V or flat belt pulley and complete operating instructions. Ship. wt. 107 lbs. $350.00 Value. **Item #65.** F.O.B. Chicago Now only **119.50**

FREE: NEW 48-PAGE BARGAIN CATALOG. Write Today!

ORDER DIRECT FROM AD—SEND PAYMENT OR PURCHASE ORDER TODAY—SATISFACTION GUARANTEED

GROBAN SUPPLY CO. DEPT. PS-9
1139 SO. WABASH AVE., CHICAGO 5, ILL.

MAGNETS LIFT 225 lb.

GENUINE ALNICO—NEVER WEAKENS

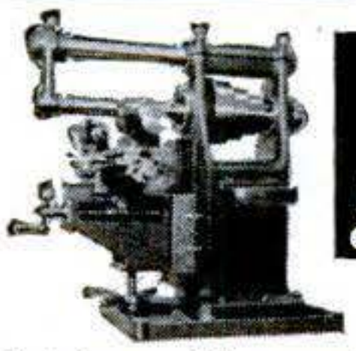
AMAZING, PERMANENT MAGNETS—WILL NOT WEAKEN! NON-ELECTRIC

Retrieve guns, tackle, tools and other steel items from lake, river, plating tanks, drains or other hard-to-reach spots. Recover drills, taps, etc. from sweepings. Clear alley of harmful tacks, nails. Many other uses. Pays for itself quickly. GUARANTEED. Try any magnet one week. Money refunded if you are not well pleased.

No. S-725 (Weighs 54 oz.) Has pull of 225 lbs. on steel block **$15.00**
No. S-675 (Weighs 49 oz.) Has pull of 175 lbs. on steel block **$10.50**
No. S-650 (Weighs 41 oz.) Has pull of 150 lbs. on steel block **$ 8.50**
No. S- 30 Hobbyist assortment of six small magnets..... **$ 1.50**

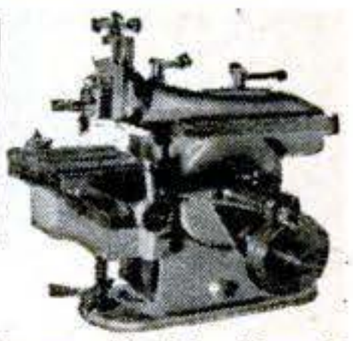
Send Money Order or check. We pay postage. No C.O.D.'s.

MIAMI MAGNET COMPANY, 3240 N.W. 27th Ave., Miami 42, Fla.



BUILD YOUR OWN MACHINE TOOLS

CASTINGS - DRAWINGS



Catalog with complete construction drawings of this No. 2 Bench Miller or six inch crank shaper 25 cents per set postpaid or send one dollar for drawings of shaper, three millers and three lathes. Refund on castings order.

POOTATUCK CORPORATION, 104 Sammis Pl., Stratford, Conn.

Build the Best! EASY TO ASSEMBLE BOAT KITS

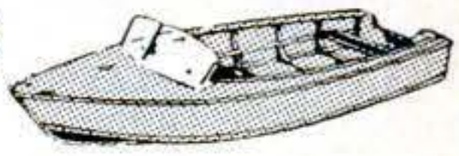
NEW CATALOG

OVER 40 PAGES, INCLUDES ALL YOU NEED TO BUILD YOUR OWN
1 - BOAT KITS—30 MODELS
2 - MARINE HARDWARE
3 - MARINE ENGINES
4 - MARINE CONVERSIONS
5 - PAINTS & COLOR CHARTS

All For Only 35c, SEND COIN TODAY

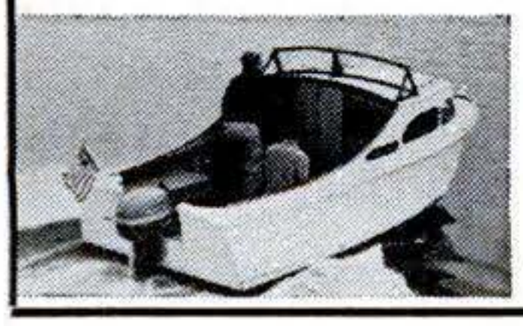
ROWBOATS 8-10-12-14 FT. **$39 up**

OUTBOARDS 8 Models 12 to 18 FT.



INBOARDS & CABIN CRUISERS 16 TO 23 FT.

NEW 18 FT. OUTBOARD CABIN CRUISER



FAST VEE BOTTOM HULL SPEEDS UP TO 25 M.P.H. — ROOMY CABIN, WITH TOILET, SLEEPS TWO —

U-MAK-IT PRODUCTS

703R-WHITTIER ST., Bronx 59, N. Y. City

Copyrighted material

EVERY ELECTRIC DRILL A POWERFUL PORTABLE SAW

JOIN THE THOUSANDS who SAVE WORK — SAVE TIME and do the job BETTER with

OVER 100,000 SOLD 'ARCO SAW'

CAN BE USED WITH ONE HAND

ATTACHES TO ANY ¼" ELECTRIC DRILL IN ONE MINUTE!

SAFETY-YOKE

ANGLE DRIVE *(with STEEL GEARS)* ELIMINATES DANGEROUS DIRECT DRIVE.

At Better Hardware Stores Everywhere

DEPTH GAGE, 0 to 1¼".

BEVEL GAGE, 0 to 45° ANGLE.

ADJUSTABLE RIP GAGE.

Also has VISUAL GUIDE (not shown).

WHAT A VALUE!
No. 445 "ARCO-SAW" (shown) **11.50** with ALL GAGES & 4" "HYCARBON" Cross-cut Blade.
No. 444 "ARCO-SAW"— same as above, less gages. Has accurate visual guide **9.95**

CUTS 1¼", or 2x4 by turning over

90-DAY FACTORY GUARANTEE

READ WHAT ENTHUSIASTIC "ARCO-SAW" USERS SAY:

Best of all my tools. H.D., Wanwatosa, Wisc.
...a wonderful time saver...very simple to operate.M.H., L.I.,N.Y.
...haven't used a handsaw since I purchased the "ARCO-SAW".
D.S., West Roxbury, Mass.

If not available at your dealer, TRY "ARCO-SAW" on our FREE 10-DAY NO RISK GUARANTEE. If you are not completely satisfied, simply return "ARCO-SAW" for a full refund.

GET "ARCO-SAW" TODAY at your dealer or send us check or M.O. (Postpaid). C.O.D.'s — postage extra. Write for literature of other tools.

DEALERS: *Write for nearest wholesaler.*

ARROW METAL PRODUCTS CO.
DEPT. PS-9, 140 WEST BROADWAY, N. Y. 13, N. Y.

WELD IT YOURSELF IN A JIFFY!

Weld, Cut, Braze, Solder
IRON, STEEL, BRONZE, BRASS, ALUMINUM & OTHER METALS

Tool and Equipment breakdowns are always annoying and costly. Don't let them bother you. Get a Dynamic Arc Welder. You can do expert work on your very first job. Welders operate from any properly wired 110 V. AC line. The handiest "tool" in your workshop. A Dynamic Welder will save its low cost over and over again in time and money.

Everything **YOU NEED**

One low price gives you a complete welding outfit ready to use. Save Money! Buy direct! Sold on 10 day money back guarantee. Send today for FREE details.

DYNAMIC INDUSTRIAL type transformer Arc Welder 75 amp. output for Industrial or Workshop use.

DYNAMIC WELDER CO.
Dept. D3-JC 13 E. 23rd St.
Chicago 16, Ill.

Free Details and "How to Weld"

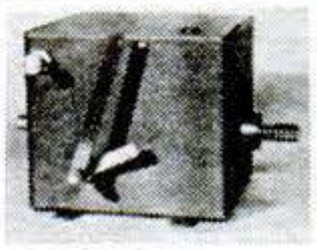
HASTINGS
STEEL-VENT PISTON RINGS
The best money you can spend on your car

DRAINS Cellars, Laundry Tubs;
CIRCULATES Oil; IRRIGATES Gardens

Original "Type P" Pump has 2400 GPH capacity. 360 GPH 75' high, or 1500 GPH from 25' well. Use any ⅛ to ½ HP motor. DOES NOT CLOG. 1" intake; ¾" outlet.
Only $6.95 postpaid if cash with order. (West of Mississippi, add 50c.) **$6.95** Motor coupling included.
MONEY BACK GUARANTEE!
Also Gear Pumps in all sizes.

LABAWCO PUMPS, BELLE MEAD 3, N. J.

VARIABLE SPEED HYDRAULIC POWER TRANSMISSION



It has Infinite Speeds 0 to 550 Reverse Automatic Overload Protection; Adjustable Torque up to 180 inch pounds. ⅝" Input and Output Shafts. It will handle ¼ to 1½ H.P. Motor. Case measures 7½" long 7" high 6½" wide. VALUE OVER $300. Shipping Wt. 25#. On C.O.D. Orders we require a 10% Deposit.

only $54.50 Fob. Chicago

DIRZIUS MACHINE SHOP "R" 1423-25 So. 52nd Ave., Cicero 50, Ill.

RESET LOOSE CASTERS

EASY! Fill the hole with Plastic Wood... then force caster back into place. Handles like putty, hardens into wood. Plastic Wood holds firmly, lastingly.

PLASTIC WOOD®

A CELLULOSE FIBRE FILLER

IN CANS OR TUBES

P.S. Pulleys, hinges, locks and latches work better with **3-IN-ONE Oil**

WANT TO SAVE GAS? ½ MILLION NOW USE GANES

AMAZING GANE NEEDLE | TRY ONE **FREE** IN YOUR CAR!

TRY BEFORE YOU BUY!

MANY GANE NEEDLE USERS REPORT UP to 25% more mileage, faster pickup, easier starting and smoother idling.

NOW TEST A GANE NEEDLE IN YOUR CAR for ten days, then compare your mileage and performance. If satisfied, send $1.50 per needle (8 cyl. cars take 2). If not satisfied, just return it—fair enough? Since authorities differ on its merits and some users report no improvement, TRY BEFORE YOU BUY! (Gane Needle replaces idling adjustment screw in carburetors—easily installed in a few minutes.)

FREE Auto Economy Manual
Tells how to save gas, tires, brakes, etc. Also introduces many new economy products. (Sent absolutely free to all who try Gane Needles.)

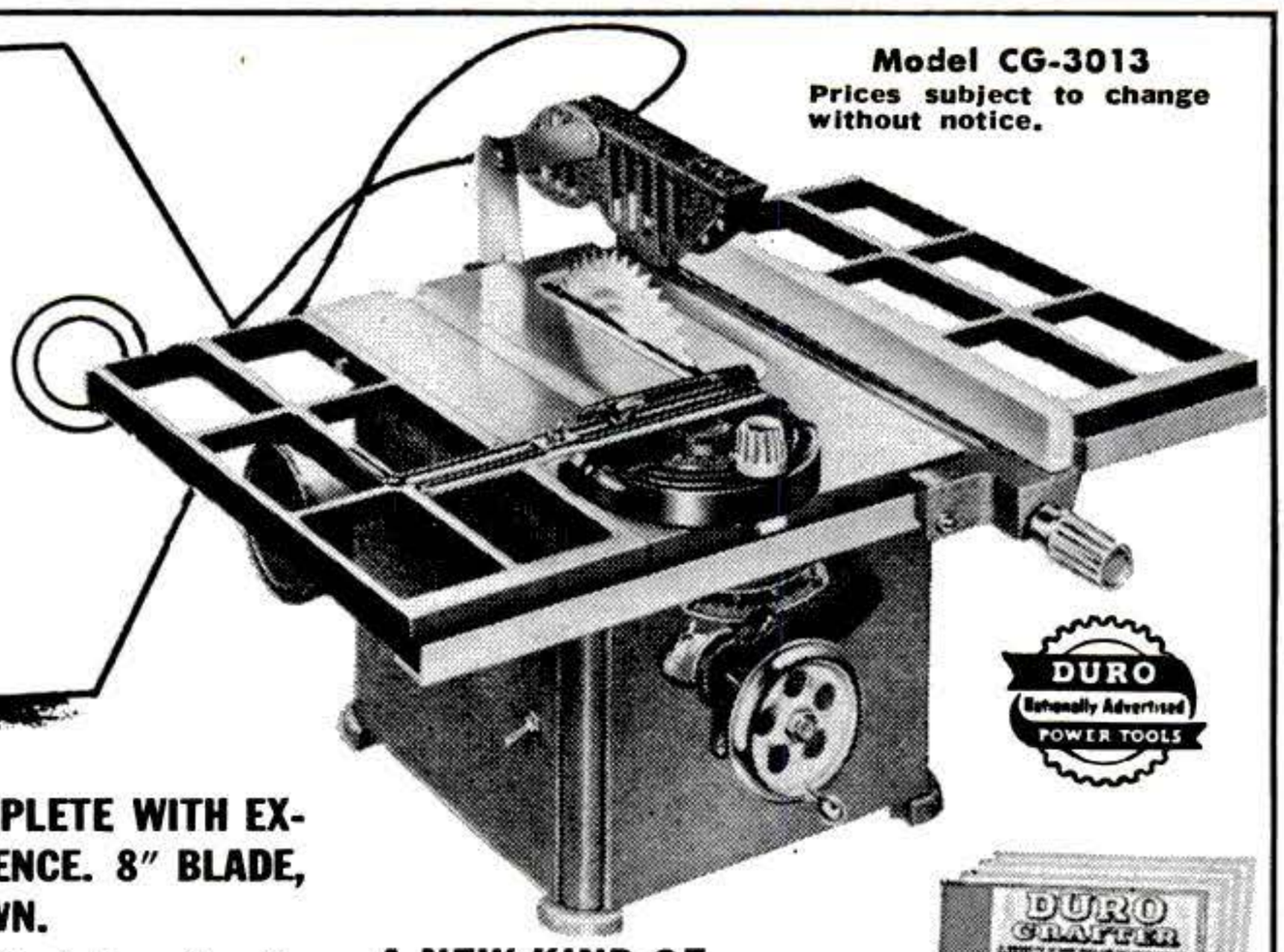
WRITE TODAY. ENCLOSE NO MONEY. PAY POSTMAN NOTHING.
Just send us your name, address, and make and year of car.
NATIONAL AUTOMOTIVE RETAIL CORP., Dept. H-9
350 W. Washington Blvd. Venice, California

Copyrighted material

An outstanding circular saw value!

$59.95

LESS SWITCH AND MOTOR



Model CG-3013
Prices subject to change without notice.

DURO Nationally Advertised POWER TOOLS

DURO 8" TILTING ARBOR CIRCULAR SAW—COMPLETE WITH EXTENSIONS, MITRE GAUGE, BLADE GUARD AND FENCE. 8" BLADE, MOTOR PULLEY AND V-BELT—EXACTLY AS SHOWN.

This completely new DURO 8" Ball Bearing Tilt Arbor Saw is like 8 tools in one—and it's the biggest saw value on the market today. You will find it the workhorse of your workshop—your major power tool handling an amazing variety of jobs. There is a full 7⅜" ahead of the blade. It makes cuts up to 2⅜" in depth. With grilled extensions the work table measures 26x17⅛". The new Duro arbor lock, tilts and locks the blade . . . instantly, safely, with one control. Only Duro offers the exclusive new motor pulley which insures a positive drive, less belt twist and longer belt life. Send coupon today for full details and specifications.

DURO METAL PRODUCTS CO.
2652 NORTH KILDARE AVE. CHICAGO 39, ILL.

Makers of Nationally Advertised Duro-Chrome Hand Tools

A NEW KIND OF PROJECT MAGAZINE

Refreshingly new material—presented with photographs, plan drawings, step by step instructions, that even a beginner can follow easily. Send 25c for sample copy, or you can save ⅓ and get 6 issues for $1. Either way we'll refund your money if not delighted.

DURO METAL PRODUCTS CO.
2652 North Kildare Ave., Chicago 39, Ill.
Please send me full details about the new Duro 8" Tilt Arbor Saw.
☐ I enclose 25c for sample copy of DURO CRAFTER Project Magazine.
☐ I enclose $1 for 6 full issues of the DURO CRAFTER.

Name.....
Address.....
City.....Zone...State.....
Dealer's Name.....

TAKE LESS THAN 1 MINUTE TO

Keep Paint Brushes Like NEW!

Store Them Dry. They Stay Soft and Flexible READY FOR INSTANT USE!

PROCESS 33

INSTANT PAINT BRUSH CLEANER

- Quickly cleans fresh paint from a paint brush or roller.
- You can paint instantly with another color—or store brush dry—it will stay soft.
- Economical—can be used again and again.
- Safe for all brushes and rollers.

Pint 59¢ Quart 98¢ G. N. COUGHLAN CO. WEST ORANGE, N.J.

Wherever Paint is Sold

CAR HARD TO START?

Get EASY STARTING ... Smoother Engine Performance ... Save Gas! with SENSATIONAL NEW SISSON Electrimatic CHOKE

Positive, dependable *electric choking* gives *quick, easy starts* every time in any weather. Smoother warm-up . . . no stalling ...no flooding...no seasonal adjustment! Fits any car equipped for automatic choking. $5 complete.

INSTALL IT YOURSELF Get FREE Illustrated Folder

Sisson Choke, 1654 Ohio Avenue
Anderson, Indiana

☐ Please send me FREE illustrated Electrimatic folder
☐ I enclose $5 (check or money order) for one Sisson Electrimatic Choke with complete instructions

Car Make_____Year_____Cyl._____
Carburetor Make_____
*Name*_____
*Address*_____
*City*_____*Zone*____*State*_____

Copyrighted material

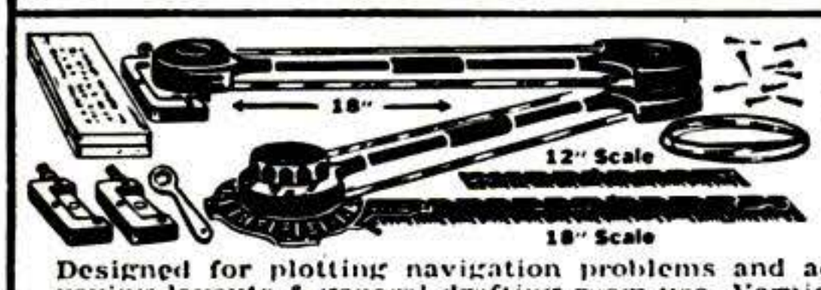
WAR SURPLUS AND OTHER BARGAINS — SAVE UP TO 90%

"BALTIC" SWEDISH TOOLMAKERS VERNIER CALIPER

New low price due to lower import duty!

ULTRA PRECISION — 0.6" in .001 graduations. Quick, accurate depth, inside, outside measurements, line engraving. Extra heavy rule, hand-fitted sliding head, no side play. Rockwell C.60, lapped measuring surfaces. For the extra particular mechanic who must have the best—used and recommended by most critical experimental & research machinists at Lockheed, Douglas, Bendix, GM, RCA, General Electric. Save 60%! A $37.50 value—only **$14.75**, leather case incl. Also a standard grade Mauser Design Caliper made in Germany. For the production machinist, 0-6" in thousandth. Money back guarantee. Only **$10.95**, leather case incl.

AIRCRAFT NAVIGATIONAL DRAFTING MACHINE



Designed for plotting navigation problems and adaptable to surveying layouts & general drafting room use. Vernier hub graduated 0° to 360° by 1's, will lock unit at any desired degree. (AN5750). Mfg. by Bruning Wallace. Non-magnetic K-Monel bands are not subject to corrosion. ALL NEW. Complete with fitted hardwood case incl. spare parts. Wt. 11 lbs. Approx. Govt. Cost $150. WHILE THEY LAST! ALL yours for just **$47.50.**

ALL NEW HIGH SPEED DRILLS

Fractional & numbered. Nationally known brand. Set of 30, assorted sizes, an $18 value for only **$3.50** complete.

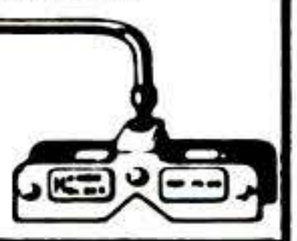
STRAIGHT SHANK DRILLS — 10 different sizes High Speed Straight Shank Jobber length drills. 1/4" to 1/2" (shank same diameter as drill). Here's a $25 value you can have for **$3.50.**

WIRE GAUGE DRILLS—Between 45 and 60. Highest quality steel. You'll recognize the brand. Hard to get sizes valued at $7.50. Airborne gives you a set of 12 for just **$1.50**

Set from 1/4" to 33/64". Five sizes with 1/4" shanks. You'll surely want this set for the low, low price of **$3.00.**

MAGNETIC BASE INDICATOR HOLDER

For all types of dial indicators with guaranteed lifetime ALNICO magnets. V-slotted base has a 45 to 50 lbs. pull, permits immediate application without clamps or special attachments and mountings can be made on cylindrical surfaces. For machinists, tool-makers and inspectors. Base 3 1/2" long by 1 1/8" wide. NEW. ----**$3.50** ea.



Send 25c for 1952 catalog. Bargains for everyone. Check, Money Order or Cash. 25% deposit on C.O.D. orders. Prices F.O.B. Culver City, Calif., unless otherwise stated.

AIRBORNE SALES CO., INC., Dept. PS952
8501 Stellar Dr. Culver City, Calif.

WIPE AWAY— RUST FROM ANY METAL SURFACE IN SECONDS

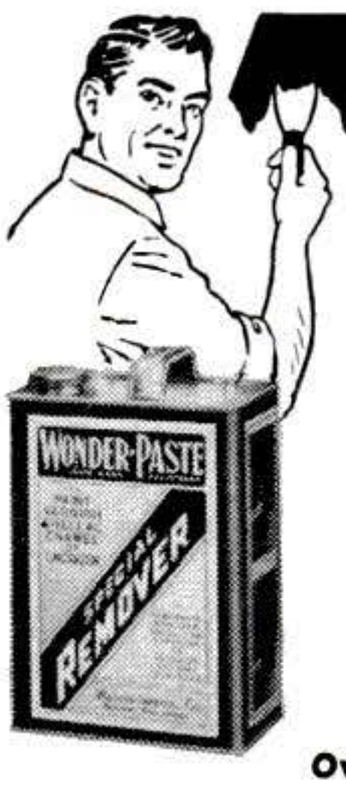
Amazing new product wipes away rust, corrosion and grime "Like Magic". It loosens and removes even the most stubborn, encrusted, pitted rust in a jiffy — from Tools, Machinery, Automobiles, Bicycles, Boat Trim, Lawn Mowers, Garden Equipment, Sink Pipes, Radiators, etc. Watch the gleaming appearance restored at once to all your metal surfaces. Get a bottle of BEDFORD RUST REMOVER NOW!—give it a 5 minute application—and see rust disappear. Large 6 oz. bottle....only **$1**

$1

Please send payment with order. Results absolutely guaranteed or money back!

BEDFORD CO.
80 East 11th St., Dept. R17, New York 3, N. Y.

EASIEST way to STRIP PAINT



Here's all you do: Apply Wonder-Paste with a paint brush over the old finish. Let it soak in... Soon you have a soft, moist mass that you can peel off cleanly and quickly with a putty knife. Unlike a torch, no scorched spots remain to be sanded. Wonder-Paste won't harm wood, metal, fabric or your hands. At better paint and hardware stores.

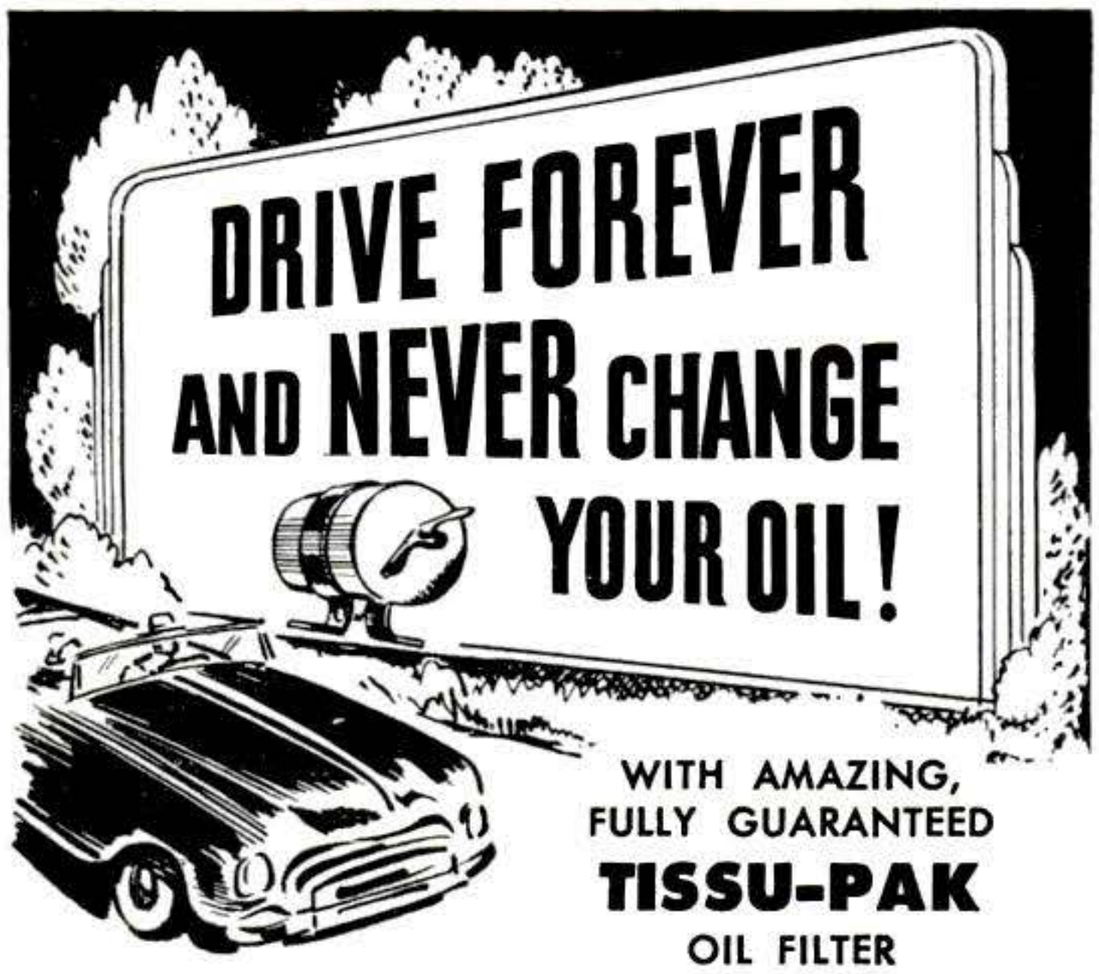
Write for literature

WONDER-PASTE

Over 3,000,000 cans sold—it must be good!

Wilson-Imperial Company, 121 Chestnut Street, Newark 5, N. J.

DRIVE FOREVER AND NEVER CHANGE YOUR OIL!



WITH AMAZING, FULLY GUARANTEED **TISSU-PAK** OIL FILTER

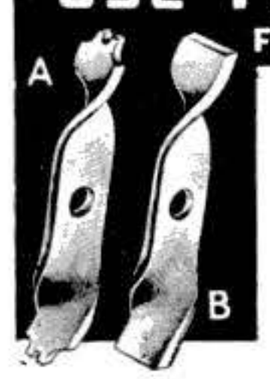
Keeps engine oil sparkling clean. Eliminates expensive oil changes and costly element replacements. Inexpensive to buy. *Easy to install* on all gasoline engines up to 14 quarts crankcase capacity—automobiles, trucks, tractors, stationary and marine engines.

Enthusiastic testimonial from thousands of individual and fleet users.

Write today for FREE "Tissu-Pak Facts." Mailed immediately.

HENDERIZE, INC. • 5667-E1 FREEPORT BLVD. SACRAMENTO, CALIF.

USE YOUR BENCH SAW FOR JOINTING & CUTTING MOULDINGS



With our six inch tool steel cutters make mouldings, casings, drop-leaf tables, grooves beading and jointing. Moulding cutters, A 1 in. wide $1.75. 1 1/2 in. $2.25. Jointing cutters, B 1 in. $1.75. 1 1/2 in. $2.25. E 1 in. for drop-leaf tables. $1.75. E 1 1/2 in. Makes 3/4 in. cove & Quarter. $2.25. Postpaid. Guaranteed. State size hole. List & Folder free.

JOHN A. SANDSTROM
Rt. 2-P. Clearwater, Fla.

NO PARTS TO FLY OFF!!

PRECISION CALIPER

MZB — This trade mark guarantees highest quality

MODEL #30-78

With set screw accurately fixing position of the slide

M-Z-B PRECISION CALIPERS made by the leading European precision tool craftsmen. Guaranteed highest accuracy for any kind of precision work. Chrome steel, spring-tempered, glass hard on all measuring surfaces. For measuring inside, outside, thread and depth. To read .001" and 1/128", 8" overall, 6" graduation.

The following models have the famous M-Z-B cam lock which guarantees fixed and never shifting setting when pressure lock is released.

#30-61	Chrome Steel	.001" & 1/128"	$14.00
#30-64	Chrome Steel	.001" & 1/20 mm	$14.00
#30-62	Stainless Steel	.001" & 1/128"	$16.50
#30-65	Stainless Steel	.001" & 1/20 mm	$16.50

Leather cases supplied free of charge with each caliper. You pay postage on C.O.D. Money back guarantee. Other models up to 12" available. Send for our catalog of fine imported pliers.

$9.75 POST PAID

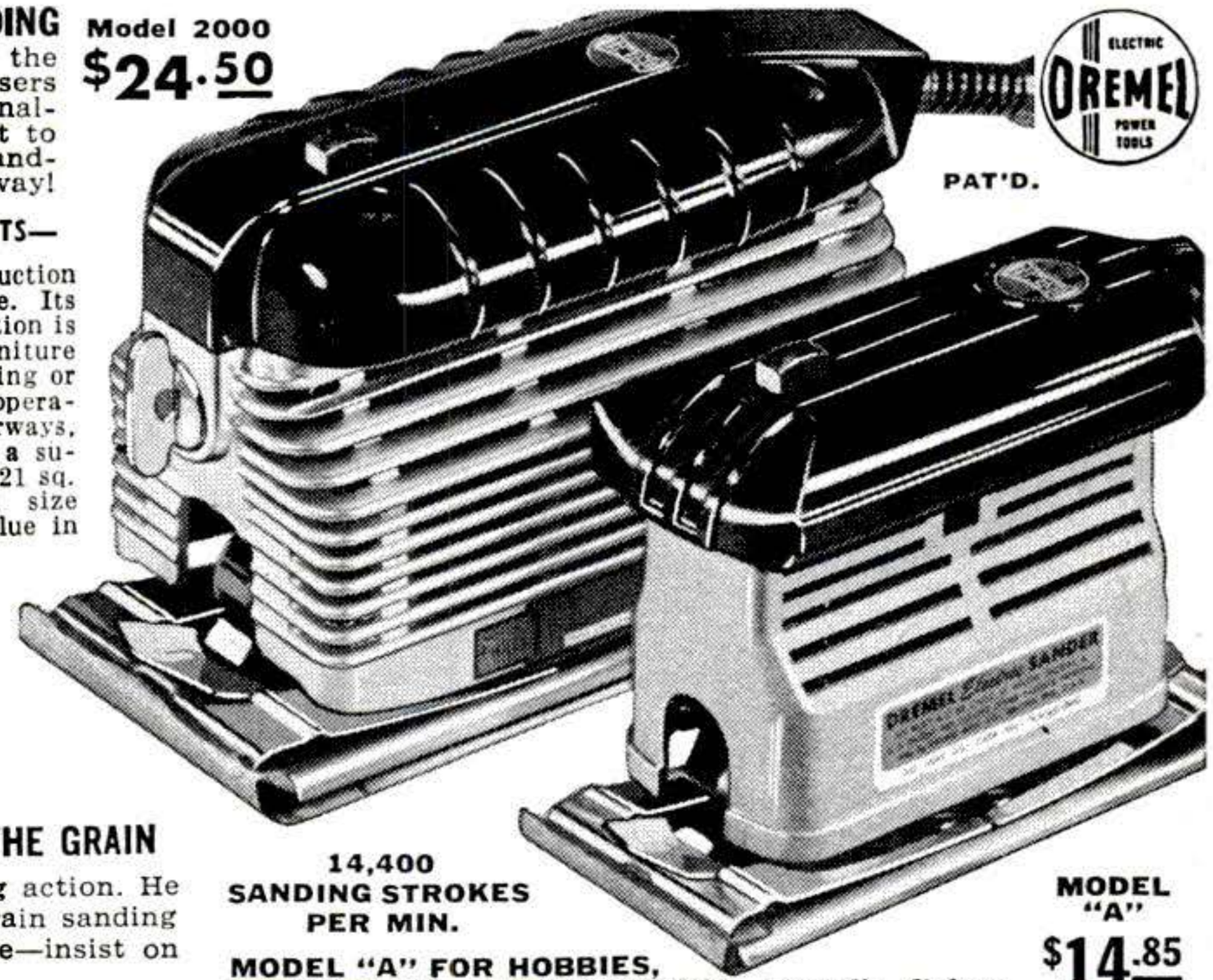
INTER-CONTINENTAL TRADING CORP.
90 WEST STREET • NEW YORK 6, N. Y.

Copyrighted material

FOR FASTER, SCRATCH-FREE SANDING
USE DREMEL *Straight-Line Action* ELECTRIC SANDERS

FOR ALL HOUSEHOLD AND WORKSHOP SANDING
You'll find Dremel Sanders indispensable around the house and workshop. Thousands of satisfied users have proved Dremel Sanders produce professional-like, scratch-free surfaces . . . are durably built to give years of service. Avoid slow, tiresome hand-sanding. Order a Dremel Electric Sander right away!

Model 2000
$24.50



MODEL 2000 FOR HEAVY DUTY WOODWORKING PROJECTS—

A high-speed, fast-cutting production sander for home and shop use. Its straight-line, **with-the-grain** action is ideal for redecorating jobs, furniture and cabinet making, boat building or refinishing. Great for building operations like woodwork, doors, stairways, dry-wall joints, etc. Also does a superb polishing job! Wt. 5 lbs.; 21 sq. in. sanding surface; over-all size 3⅛"x4½"x7". Finest sander value in the field and fully guaranteed!

MODEL 2000 PRICE INCLUDES this sturdy steel storage case, 25 asst'd. abrasives, and sheepskin polish pad.

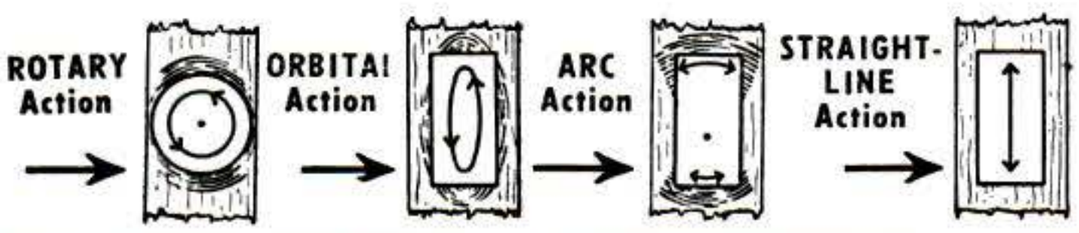
BOTH MODELS FEATURE!
Only 2 moving parts; easy one-hand operation; 10-sec. paper change; 14,400 strokes per min., 110-120 V., 60-cycle, AC.

14,400 SANDING STROKES PER MIN.

ONLY STRAIGHT-LINE ACTION SANDS WITH THE GRAIN

Ask any professional woodworker about sanding action. He will tell you that only straight-line, with-the-grain sanding can produce a flawless finish. Follow his advice—insist on Dremel.

BEFORE YOU BUY ANY SANDER . . . COMPARE!

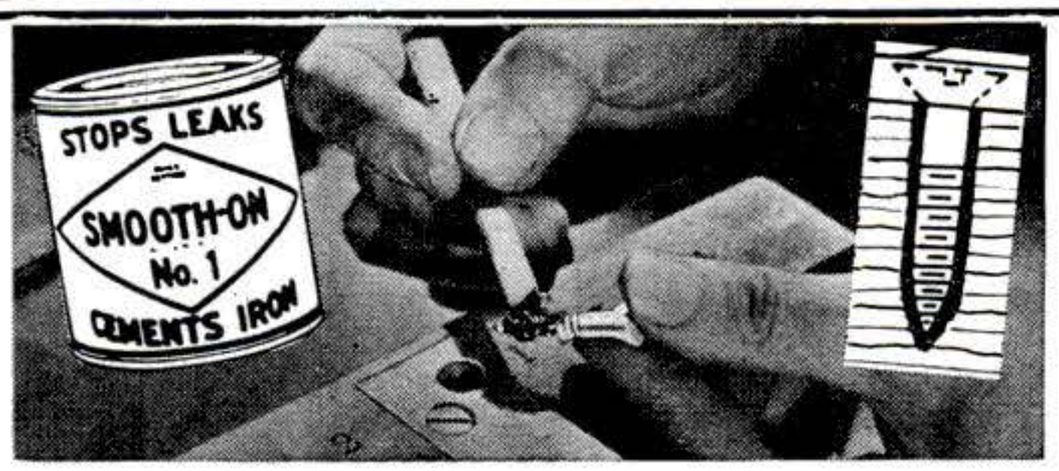


MODEL "A"
$14.85

MODEL "A" FOR HOBBIES, REFINISHING, REDECORATING—Dremel's lighter capacity, excellent all-purpose sander for home maintenance, unfinished furniture, hobby projects, etc. Wonderful wax polisher. A soothing massager! Only 2½ lbs. with 12" sanding surface.

Price includes 6 sandpapers, 1 sheepskin 1 felt pad.

WHERE TO BUY—If dealer doesn't carry, remit in full for postpaid shipt. Or send only $2 now, pay postman balance plus postage and C.O.D. fee. *Five-day trial, money-back guarantee!*
DREMEL MFG. CO. Dept. 122-J Racine, Wis.



When Screws Won't Stay Tight, Use SMOOTH-ON

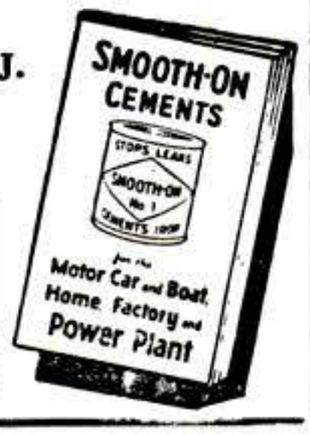
Apply Smooth-On No. 1 Iron Cement to screw threads and into the screw hole. Insert and tighten up the screw. It will take hold and, when set, will *stay tight*, for Smooth-On expands slightly as it hardens, wedging the screw in place. This is only one small use for this general-purpose iron cement. With it you can stop leaks and seal cracks in cast metal parts, tighten loose knobs, casters, tool and utensil handles, make many auto repairs. Buy it in 1¾-oz., 7-oz., 1-lb. or larger size at your hardware store. If they haven't Smooth-On, write us.

FREE 40-page Repair Handbook

Many original uses for Smooth-On around the house, on the car, etc. Simple directions. 170 illustrations. Send postcard for YOUR free copy.

SMOOTH-ON MFG. CO., Dept. 58J
570 Communipaw Ave., Jersey City 4, N. J.

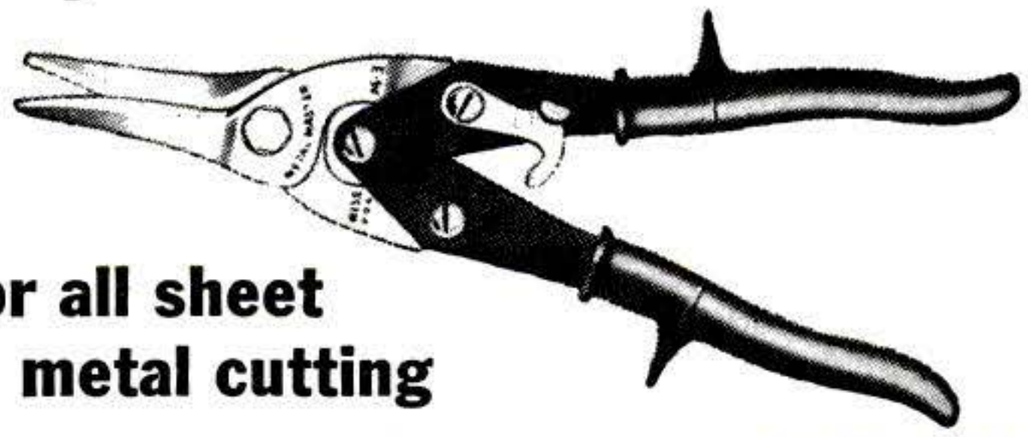
Do it with
SMOOTH-ON



THE IRON REPAIR CEMENT OF MANY USES

---

*Buy the Best...*WISS!



for all sheet metal cutting

WISS Metal Master Compound Action Snips

#M-3. Easily cuts 18 gauge sheet metal. Cuts curves and circles as well as straight. Ideal for the home workshop. $4.25. Rubber grips recommended, 60¢ extra.

WISS Straight Cut Snips

#9. Crucible steel inlaid blades. The basic snips for straight metal cutting. Gun metal handles. Overall length 12½". $5.25.

WISS Combination Snips

#V-13. Solid steel, with gray japanned handles. Cuts curves and irregular shapes with ease. Handy pocket size. 7" long. Accurately tempered jaws and strong bolts. $1.85.

Prices slightly higher Denver and West

WISS
NEWARK, N.J.

Quality for more than a Century

J. WISS & SONS CO. • NEWARK 7, N. J.

Copyrighted material

NEW MOON

BETTER LIVING

. . . . at new low cost!

Join thousands of happy, worry-free and rent-free New Moon owners. Move to top paying jobs, enjoy travel and vacation fun — a home completely furnished and ready to live-in, including kitchen, bath and automatic heating system. Own a New Moon on our rent-like payment plan and enjoy all the comfort and advantages of genuine home ownership at once.

Free! Write today for literature describing the complete line of New Moon apartment homes.

Member of TCMA

REDMAN TRAILER CO.
38 BRIDGE ST., ALMA, MICH.

BUILD YOUR OWN POWER TOOLS - TILT/ARBOR SAW

BANDSAW
BELT SANDER
SAVE $50. OR MORE

TILT/ARBOR SAW

● 27x28 in. table stays level. Blade tilts full 45 degrees. ● 10 in. blade cuts 3¼ in. deep, jack-screw depth adjustment. ● Floor model, 34 in. table height. ● New Departure ball bearing arbor, ¾ in. precision shaft, ready to run, ⅝ in. bore blades. ● Quick positioning, self-aligning rip fence guide. ● Sturdy wood, steel and aluminum construction. ● No machining—build easily with hand tools only. ● Capacity and performance of floor saws selling for $150.00 and up!

GIL-BILT Metal Parts Kit, includes Plans, ball-bearing arbor, cast aluminum miter gauge and bar, rip fence guide, machined lock knobs, jackscrew mechanism with 4½ in. handwheel, and all other metal parts (less blade) $20.95
Same Kit with 10" combination blade 24.90
Same Kit with 8" combination blade 23.90

If not satisfied, return Kits in 10 days for refund of purchase price.

(Prices include postage up to 300 miles. Over 300 add 5%)

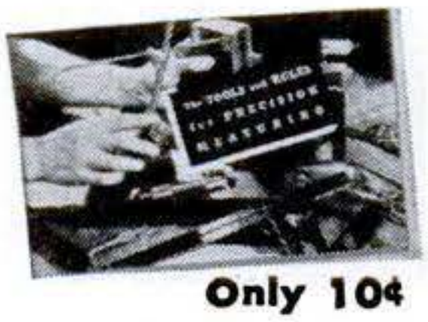
GIL-BUILT Step-by-Step pictorial plans. (No blueprint reading required), full scale patterns, actual photographs for above **10" TILT ARBOR SAW, 12" BAND SAW, BELT SANDER, 8" TILT/TABLE SAW** $1.00 each, postpaid anywhere in the world. All 4 Plans for $3.00, or write for FREE descriptive catalog.

COMPLETE PLANS *only* $1.00 EACH

GILLIOM POWER TOOLS P. O. Box 1-VJ, Lambert Field, St. Louis 21, Missouri

SPECIAL OFFER—Only 10¢
50-Page "Tools and Rules" Book

"The Tools and Rules for Precision Measuring" tells how to make accuracy a habit, shows the methods skilled mechanics use. 100 pictures plus reference tables. Send only one dime. Address Dept. PS.



Only 10¢

THE L. S. STARRETT CO. • ATHOL, MASS., U. S. A.

BRONZE FOUNDRY

Schools and Home Workshops

Make your own castings of aluminum, copper, bronze, silver. Foundry sets are available in three sizes including 2400 Deg. F. blast Furnaces, $22.50; $29.50; and $42.00. f.o.b. Kansas City. Free Circular.

KANSAS CITY SPECIALTIES CO. P. O. BOX 6022, DEPT. S-9 KANSAS CITY, MO.

ELECTRIC WELDER

AC or DC 110 Volts

"The Little Marvel" All-Metal welder

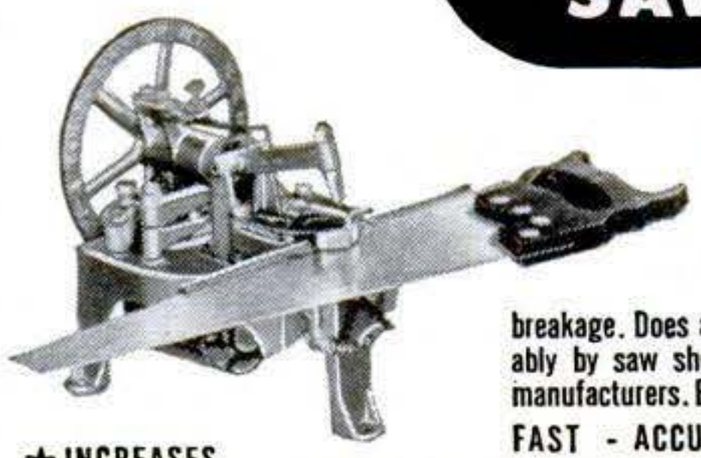
5-year written guarantee. Welds ⅛" thick metal or money back. Repairs tanks, tools, fenders, machine parts, etc. Comes complete with everything—rods, unit, eye shield, and directions. We also make a welder for 16 to 22 gauge metal . . . $3.95 complete. Transformer welder $18.95. On C.O.D., postage extra.

ESSAY MFG. CO., Inc., Dept. 47, Quincy 69, Mass.

$6.45 Complete

BeMaCo Dependable

AUTOMATIC SAW SET



Sets 400 teeth per minute on hand or band saws 4 to 16 point. Hammer and anvil action sets teeth accurately and uniformly . . . No tooth breakage. Does a perfect job. Used profitably by saw shops everywhere and saw manufacturers. Every machine guaranteed!

FAST - ACCURATE - DEPENDABLE

★ INCREASES PROFITS

BEAVER MFG. CO.
SAW MACHINE Div. 14-A
800 SOUTH ISIS AVE. • INGLEWOOD, CALIF.

FREE CATALOG OF GOV'T SURPLUS

A complete POWER TOOL ACCESSORY SET for all ¼ in. Electric Drills

$20.00 worth of accessories 100 Pieces only 4.98
Post & Hand. 50c

Kit contains: Drills, Reamers, Rotary File, Steel Cutters, Grinding Wheels, Buffs, Cut Off Wheels, Mounted Stones, Polishing Compound, Mounted Circular Saw, Arbors and other items too numerous to list.

Nobody but Dental SELLS 5 New Useful

forged **PLIERS** for 4.79
Approx. value $12.00 yours for less than 98¢ per Plier
Post & Hand. 50c

PENCIL SHAPED true tempered TOOLS

ideally suited for working in almost every medium Metal, Plastic, Wood, Leather, Clay, Stone, etc. Our set of 8 NEW GOV'T SURPLUS DENTAL INSTRUMENTS worth almost $20.00, yours for only 1.98
Post & Hand 25c

150 PIECE grinding, polishing, buffing and sanding Kit for all power driven tools. only 98¢
Post & Hand. 20c

Kit contains: ¾" Circular Saw with Mandrel, 2 Mounted Stones, 2 Burs, 2 Honing Stones, Unmounted Grinding, Rubber, Cut Off and Felt Wheels and Cylinders, Cloth and Paper Sanding Discs, and 2 Mandrels to accommodate the unmounted items.

A MAGNIFICENT $4.00 VALUE

Dental Specialty & Sales Co., Dept. PS2, P.O. Box 692, Great Neck, N.Y.

Copyrighted material

GIGANTIC EXPANSION **MAIL SALE** WAR SURPLUS EXCESS INVENTORY BANKRUPT STOCK

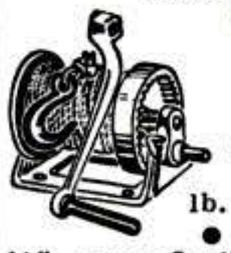
Second immense building, recently completed, doubles capacity, enables us to offer more and greater values!

BURDEN PAYS ALL SHIPPING CHARGES

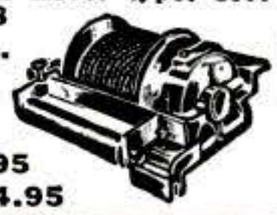
POWER PLANTS and GENERATORS

- **Master Plants,** 5KW, 115-230-v, 60-c, 4-cyl. engine, manual start. Cost over $1100.....**$531.70**
- **Onan Plants.** 5KW, 115-v, 60-c, 4-cyl. engine, push button start. Cost over $1400.00.....**$689.50**
- **Burdex Plants,** 2KW, 115-v, 60-c, Special **$297.50**
- **Homelite Plants.** 1.5KW, 115-v, 60-c. Special **$199.50**
- **Kato Generators.** 5KW, 115-v, 60-c, with control panel, drive pulley, etc. 1800 RPM. 1 phase. Cost $550 .....**$259.50**
- **Burdex Generators.** 115-v, 60-c. Ball bearing. 500-w, **$94.50;** 1000-w, **$134.90;** 200-w, **$159.50**
- ● *Many other plant bargains in catalog.*

WINCHES—CLUTCHES—BLOCKS



- **Boat,** dock, business hand winch, 1-4 gear ratio. Special....**$19.95**
- **Farm-Truck-Contractor** heavy duty hand winch. Dual ratio 1-3, 1-9. Finest cast steel construction. Special **$29.98**
- **Chain Hoist.** Lever type. 3000 lb. capacity **$19.48**
- **Winch Cable.** ¼" super-flexible (4000 lbs. cap.) 50' with load hook **$9.90**



- **Army Snatch Block.** 13,000 lb. Special **$12.95**
- **Clutch,** 6 H.P. Many uses **$14.95**

WELDING GENERATOR KITS

● $276 Aircraft 200-250 amp. 28-v, generators. Complete with cooling fan, field rheostats and "How to Build" welder instructions.....**$24.65**

PHONES—CITY and RURAL

● **Rural Magneto.** Compact oak case. Wall, (a) 3 bar, 1000-ohm, **$9.95;** (b) 4-5 bar, 1600-ohm, **$13.90. CITY** upright desk, with bells **$4.99.** Phone only, **$2.69.**

AIR COMPRESSOR UNITS

Paint, blow up tires, control termites, clean greasy engines, blow dust, etc. Build your own or buy ready-built units.

- **DeLuxe Air Kit.** Consists stainless tank 12"x24", finest 1-cyl. 3 cfm piston compressor, valves, gauge, fittings, hose, excellent paint gun, blow gun, pressure regulator, chuck and "How To Build Portable Outfit." Special **$45.49**
- **Economy Air Kit.** Same as above except 6"x24" tank and no regulator or paint gun. Each.....**$31.90**
- **Air Components.** Top quality. 1-cyl. piston comp. **$20.50;** 2-cyl. pis. comp. **$49.50;** Adj. Auto. pressure switch, **$4.95;** pressure regulator, **$2.65;** Adj. safety valve, **$1.95;** Pressure gauges, 0-160 lbs. **$1.89.**

Write for interesting Air Data-Catalog

TRACTOR WEED SPRAY OUTFITS

● Leading make. All stainless steel. 7-row outfit. Guaranteed finest unit made. List $225.50.

Special Fall Closeout.....$129.50

5-row all-brass outfit..... 79.50

SUPER BARGAINS

- **Duro 110-v Hand Hi-Speed Ball Bearing Grinder and Kit.** List $24.50. Sale.....**$13.40**
- **Hydraulic Tractor Contour Level.** Mounts on tractor. Plow on perfect contour. No surveying. List $46. Sale.....**$16.90**
- **Polished Laminated Plane Propellers** (New). Many uses—snow sleds, boats, etc. Cost over $150.00. Sale.....**$12.95**

SPECIAL FOR THE MONTH

● **Plane Landing Lights.** Amazingly bright, narrow searchlight beam over 400,000 candle power!! Operate on 110-v AC or DC. EXTRA SPECIAL **$2.99**

WATER PUMPS and SYSTEMS

Save up to 60%. Ask us for expert advice on your problem. Pumps for wells, basements, weed spraying, septic tanks, garden irrigation, etc.

- **Centrifugal Pumps.** Cast iron, stainlens steel shaft, bronze impeller, ball bearings. No. 75, ¾", **$18.90;** No. 100 1", **$28.90;** No. 150, 1½", **$35.60.**
- **Bronze Rotary Pumps.** *Low pressure type.* (25 lbs. max.) Self priming. No. 12, ½", **$12.75;** No. 34, ¾", **$16.95;** No. 101, 1", **$22.95;** *Hi-Pressure type* (150 lbs. max.) No. 612, ½" **$14.50;** No. 634, ¾", **$20.95;** No. 610, 1", **$27.95.**
- **Irrigation War Surplus Pump.** 10,000 g.p.h. 2½" intake. Two 1¾" outlets, Special....**$39.50**
- **Burdex Shallow Well System.** 110-volt, 60-c, 300 g.p.h. 40 lbs. pressure, fully automatic. Easy to install.....**$69.50**
- **Adj. Auto Pressure Switch, $4.95;** ¾" foot valve, **$2.49;** pressure gauge 0-60 lbs. **$1.89;** also hose, strainers, etc. at real savings.
- **Hand Pump.** Lever type, high capacity, Pump basements, tanks on farms, etc. Cost $35, **$27.80**

Write for useful Water Pump Data-Catalog

ARMY HOT AIR HEATERS

Forced air type. Burns gasoline, kerosene or fuel oil. Thermostatic control. 110-v. blower. Tremendous heat output (40,000 BTU.) Compact portable size 17½" high, 21" long. Wt. 44 lbs. Cost over $190.00. Sale.....**$59.50**

Miscellaneous Surplus Bargains

- **Tachometer,** 0-4000 r.p.m. Direct rd. **$6.79**
- **Drawing Sets.** Finest quality, 13-pc... **9.89**
- **Clock Timer Switch.** 110-v, 60-c..... **4.72**
- **Heater Elements,** 110-v, 2000-w..... **.99**
- **Immersion Heater Elements,** 110-v. 800-w. **3.95**
- Army 12' Guy-Turnbuckles. Useful. 10 for **3.89**
- **Motors,** 110-v, 80 r.p.m..... **8.95**
- **Hydraulic 19" Cylinders** (Cost $90)..**18.49**
- **D-C Welding Generators** (250 amp.) **99.90**
- **Magneto Farm Telephones,** 1600 ohm **13.90**
- **Battery Chargers,** 110-v..... **4.95**
- **Engineers Hand Level**..... **5.84**
- Hundreds other bargains in tools, electronic items, radio, etc.

ORDER FROM AD, or Write for 4 FREE Catalogs!

OUR 30-YEAR POLICY: ● Everything Guaranteed Satisfactory ● We Pay Shipping Charges in U.S.

FREE CATALOG **BURDEN SALES COMPANY**

831 "O" St. **Lincoln, Nebraska**

FREE!

Green Manures Chart & Book

Tell How to Do Wonders

WOULD you like to increase greatly the fertility of certain areas of your soil? Here's how you can—easily, at low cost! From early Spring to late Fall, sow one green manure crop after another and work them into the soil when they are young, green and rich in protein and chlorophyl.

Rye, buckwheat, various clovers, vetches, soy beans, sunflower, millets, barley, oats, Sudan grass, sorghums, etc., etc., can be used. You'll be amazed at the tremendously increased fertility of your soil—how much easier it is to work, and how much more moisture it holds, how it is protected from erosion, how much better crops it grows! It's better than composting or buying manure—and only a fraction of the cost and work!

Which ones to sow? For sweet and sour, heavy and light soils? For different sections of country and time of year? When to sow—how deep? How much seed? Whether or not to use lime and fertilizers? When to work into the soil? How to do it easily? All these and many other questions are answered in the big, easy-to-follow FREE CHART we have had prepared for our friends and customers by Dr. T. H. Everett of the N. Y. Botanical Gardens. Also included FREE is 68-page illustrated book that gives everything you'll want to know about 50 different crops you can grow for green manure and soil improvement.

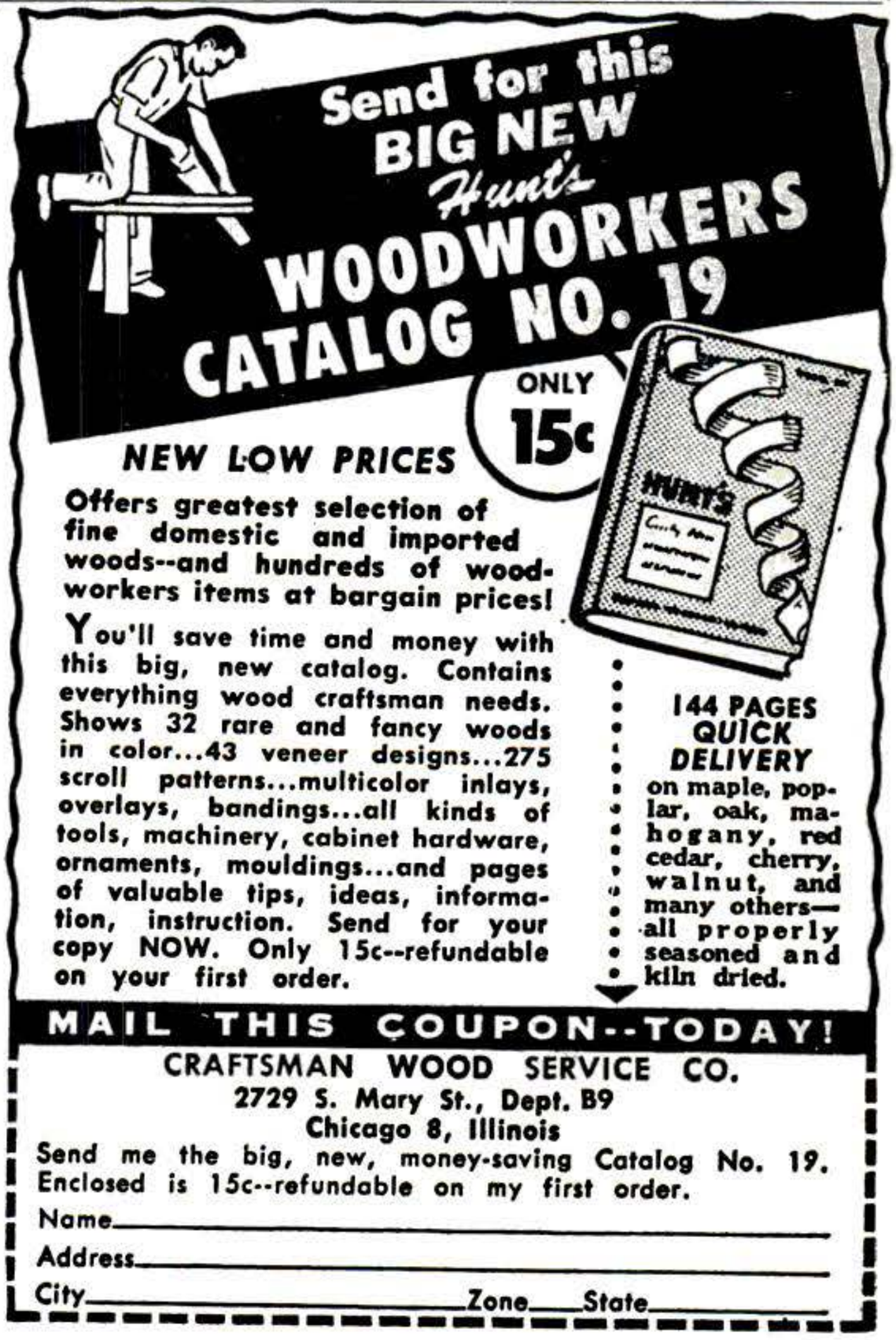
Right now is the ideal time of year to do wonders for your soil. Just send name and address for FREE CHART and BOOK. No obligation whatever.

ROTOTILLER, Inc.

Dept. 309, Troy, N. Y.

*Makers of the World-Famous Rototiller**

*Trademark Registered



Copyrighted material

Use RUST PROOF NEVER-STAIN

ALUMINUM NAILS

Yes, for less than $4.00*, you can avoid costly premature repainting. When you use "Never-Stain" ALUMINUM NAILS on the siding of your home, you are insured against unsightly rust spots and streaks. No countersinking and puttying necessary — a $60 to $75 additional saving.

When you build or remodel, insist on lifetime "Never-Stain" ALUMINUM NAILS.

**For the wood siding on the average 5-room house.*

NICHOLS WIRE & ALUMINUM CO.
DAVENPORT, IOWA

best white tape made

ONLY 98¢*

The new "Evans White-Tape" has everything you'll find in tapes costing over $1.50—plus.

- snow-white blade with bold, legible, jet-black numerals and graduations. Graduated in 32nds for first 6 inches.
- sturdy die-cast case heavily chrome-plated, calibrated for quick reading inside and outside measurements.
- blade ½" wide made of finest high carbon steel—tempered —Bonderized—enamelled—baked.
- blade replaceable in seconds—without tools—without even opening case. And Evans replacement blades cost far less.
- every "Evans White-Tape" is unconditionally guaranteed.
- exclusive Evans automatic brake gives smoother push-pull action with absolutely no "creeping" of tape into case.
- underside is white, too. Mark with ordinary pencil, remove mark with flick of thumb.
- unheard-of low price*: 10-ft. $1.49; 8-ft. $1.19; 6-ft. 98¢. Prices higher in far west and Canada.

Sold only through retailers.

Evans & CO Elizabeth, N. J., Montreal, Que. ® 7429

Makers of Evans 6-ft. Folding Rule and "Folding Yardstick"

WILL NOT CRACK

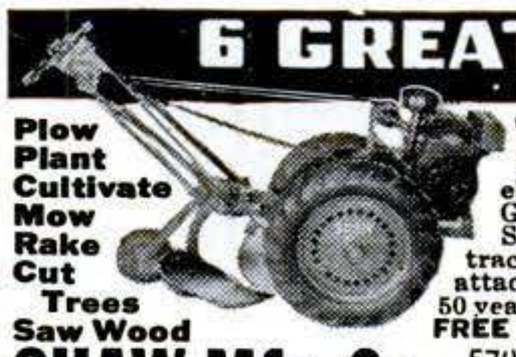
EASY TO PLAY

Amazing new Pan-American wood clarinet in beautiful "violin finish," guaranteed *not to crack!* No other clarinet like it. Musically and mechanically superior. See it and other fine Pan-Americans at dealers everywhere, or write for free literature. Mention instrument. Address Dept. 904

Write FOR FREE FOLDER on instrument of your choice

PAN-AMERICAN
BAND INSTRUMENTS
Division of C. G. CONN Ltd., Elkhart, Ind.

6 GREAT SHAW "DU-ALL" Walking or Riding Tractors



Plow
Plant
Cultivate
Mow
Rake
Cut Trees
Saw Wood

1½, 3, 5 H.P. walking models. 6, 8, 12 H.P. riding tractors. Get just the power you need in Shaw extra strength superior traction machines. All wanted tools, attachments. Dependable for nearly 50 years. See a Shaw dealer. Write for **FREE literature,** low prices—today.

SHAW Mfg. Co. 5709 Front St., Galesburg, Ks. 668-PS N. 4th St., Columbus, O.

BUILD YOUR OWN

ARC·WELDER

NO REWINDING NECESSARY

For Light or Heavy Work
We show you how to build this NEW Powerful welder without rewinding. Uses coils taken from old auto generator. Has 20 heats. Operates on either 110 or 220 volts A. C. Learn to weld. Make money welding for others. Complete plan and valuable catalog 35c.

LEJAY MFG. CO. 3323 LeJay Bldg. Minneapolis, Minnesota

SpeedWay SpeedSander

SANDS, SMOOTHS, CLEANS, BUFFS, POLISHES

This motor-driven, all-ball-bearing, orbital motion finishing sander works any wet or dry abrasive—3 covers from standard sandpaper sheet makes it easy to finish or refinish furniture, woodwork, walls. Ask your dealer to demonstrate.

Write for electric tool catalog.

SpeedWay Mfg. Co. 1864 SO. 52ND AVE. CICERO 50, ILLINOIS

GET MORE POWER

Fisher's Compression SEAL **$3.95** postpaid

- **Stop Burning Oil!**
- **Restore Compression!**

A small amount of Fisher's Compression SEAL in each cylinder bore will give you the economies of smooth, powerful (new car) performance and reduced oil consumption. Only takes minutes to apply . . . yet adds 10,000 more miles of economical driving pleasure to your car. A $100,000 insurance policy is your assurance it cannot harm the finest engine.

SATISFACTION GUARANTEED

Full purchase price refunded, if not completely satisfied. Why pay more when you can get Fisher's Compression SEAL . . . **for less.** No oil solvent baths necessary! Send cash, check or M.O. today. Only $3.95 postpaid. Free Folder. **Dealers Inquire.**

ADVANCED ENGINEERING DEPT. PS-9, BOX 7013 LOS ANGELES 37, CALIF.

Copyrighted material

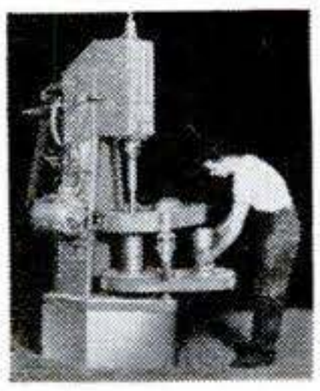
More Local Plants Needed to Make Cement Drain Tile

Hundreds of local plants are selling millions of dollars' worth of cement drain tile every year. But demand is getting bigger, and opportunities are open for hundreds more.

Farm drainage, reclamation projects, highway construction—these and other sources are creating a large market. It can be most economically supplied by compact, local plants.

Outstanding Manufacturing Opportunity

Champion drain tile machine is deliberately designed to supply compact, low-investment, tile-making equipment. Makes finest tile possible—dense, truly round, and shale proof. Better than clay tile, yet can sell for less because local production saves freight and distribution cost. But project possibilities are high. Business requires no previous experience — no skilled labor — no special building. Equipment available on easy terms. Full information on the cement tile business and equipment are given in the Drain Tile Book — free on request.



Concrete Equipment Company
E3 521 Ottawa Ave., Holland, Michigan

KING MIDGET

WORLD'S LOWEST PRICED 2 PASSENGER AUTO

Drive it for 75c per week. Amazing performance. Surprising comfort. All steel construction. Ready to run or assemble it yourself with our bolt together parts. Rider Agents wanted, earn your car Free. Send 25c for detailed literature or $1 (refunded first order) for actual assembly book and service manual filled with photos, drawings, specifications, etc.

MIDGET MOTORS MFG. CO. *ATHENS, OHIO*

CASH IN YOUR SPARE TIME!

BIG MONEY IN OWN BUSINESS

YOU CAN MAKE UP TO $40 a DAY sharpening and setting circular saws for factories, builders, lumber yards—with NEW BELSAW COMPLETE CIRCULAR SAW SHOP. **Low Cost, only $15 down,** sharpens 4 to 5 saws an hour. *No experience needed!* Instructions Furnished. Send Postcard Today for FREE BOOK. ▶

LIFE-TIME SECURITY YOUR OWN BUSINESS

BELSAW MACHINERY CO. 4405 Field Bldg. Kansas City 2, Mo.

It's NEW, *BIGGER*, Better
The DELTAGRAM...

• 6 GREAT ISSUES *Only* $1.00 •

SEND FOR FREE *"Get Acquainted"* Copy

For only a dollar you get a whole year of Deltagrams—over 100 shop-tested plans, scores of fine projects and many valuable tips on home repairs and care of fine tools. Delta spent months and thousands of dollars to find out what you homecraftsmen want in a magazine—and the new Deltagram is the answer to your demand: 6 wonderful issues each year—truly a treasure house of fun and profit. ***Send $1.00 today for your 1 year subscription! Or, if you prefer, first write for a free "sample" copy. Delta Power Tool Division. Rockwell Manufacturing Co., 504K N. Lexington Ave., Pittsburgh 8, Pa.***

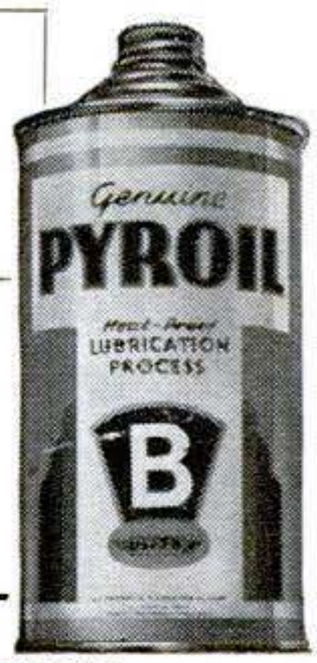
PYROIL
keeps your car
"Oil Right"

• You can be sure your motor is getting the RIGHT amount of lubrication on the RIGHT parts at the RIGHT time, when you use Pyroil. Because Pyroil contains the special property of making ordinary oil adhere to exposed motor surfaces. This protective film of oil clings to vital piston rings and cylinder walls, preventing condensation and rust. Pyroil makes your car "start easy." It cleans your motor and keeps it clean. You're so right to add Pyroil—it will keep your car "oil right"—it will add miles to your car.

• Pyroil for Aircraft Engines

Use Aircraft Pyroil B for lubricating oil, Aircraft Pyroil A for gasoline.

GIVEN! An attractive Pyroil metal savings bank—takes coins up to 50c pieces. MOTORISTS, it's yours for the asking—sent postage paid.



Manufactured and Guaranteed by Pyroil Company, 158 Pyroil Bldg., La Crosse, Wisconsin.

Canadian Distributors: Central Purchasing Agencies, Ltd., Toronto, Ontario

PYROIL COMPANY
158 Pyroil Bldg., La Crosse, Wisconsin

I want my car to last and run properly. Please tell me more about Pyroil and how it can accomplish this for me.

Name _____

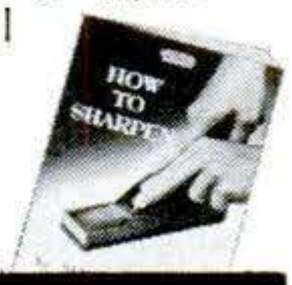
Address _____

City or Town _____ State _____

Copyrighted material

MAKE YOUR POWER-SAW MORE VERSATILE

Do more jobs with machine speed and accuracy. BEHR-MANNING RESINOID* Cut-Off Wheels fit most stationary and portable power-saws. No edges to dull—they stay sharp because they're all solid abrasive. Two types available ALUNDUM® for all metals, and CRYSTOLON® for non-metallic materials. At most hardware stores, or write direct, giving wheel size and material to be cut.



Send 10c for "How to Sharpen." Covers all shop tools. Write Behr-Manning Corp., Troy, N. Y., Dept. PS-9

® * Trade marks

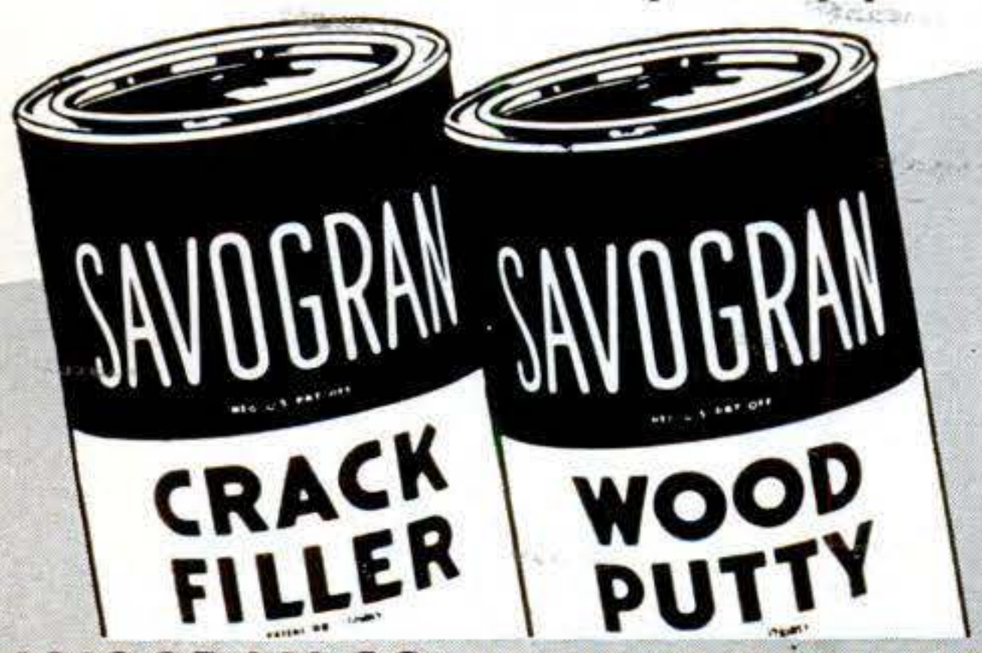
BEHR-MANNING CORPORATION
division of NORTON Company
▲COATED ABRASIVES▲SHARPENING STONES▲PRESSURE-SENSITIVE TAPES

It's No Trick! FILL CRACKS QUICK!

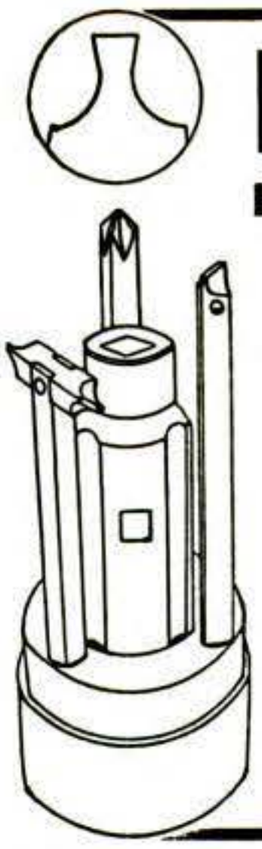
Fill cracks and holes in wood, plaster and other materials . . . and get a slick, easy-to-paint surface every time! SAVOGRAN CRACK FILLER dries hard as stone. An excellent spackling compound. SAVOGRAN WOOD PUTTY contains real wood — easily tooled! Both are quick-hardening, non-shrinking. Repair furniture, floors, woodwork . . . 1001 uses!

Send for FREE Handi-Hint Folder!

Sold where you buy paints



SAVOGRAN CO. 25 HUNTINGTON AVE.
DEPT. 45, BOSTON 16, MASS.



KANTSLIP TOOL STEEL

HOLLOW-GROUND SCREW DRIVERS

1. Coarse & fine, double end driver.
2. Phillips type—fits all sizes.
3. Offset driver—double end, T-shaped, Hollow-ground, too! Kantslip! Handle, straight grip and T-grip.

Handy stand case. Drivers Stick in the screw slots—no need to push on screws. T-grip gives great power. Remove screws with bad slots. The experts make theirs like this. YOURS for **$2.45** C.O.D. accepted—or send Money Order & save C.O.D. charges.

Productioneers, Inc., Dept. PS-9
726 W. 19th St. Chicago, Ill.
AGENTS WANTED

LUXURIOUS CONTOUR CHAIR BUILD IN ONE EVENING

If you can use a hammer, you can build this smart, comfortable, scientifically correct chair in a few hours. All parts furnished in complete kit. Adjustable positions, plastic upholstery, four colors—red, blue, green or brown. Modern, healthful, relaxing, for den or living room. Send order, with choice of color. $5 check or money order, balance C.O.D. Money back guarantee.

Complete Kit **$34.95** f.o.b. Baltimore

BESTE CRAFT CO., BOX 3701A, BALTIMORE 14, MD.

HOBBYISTS! SHOPMEN! *Special* ONLY $54.50

PALMGREN "HOBB-E" Rotary, Index, Milling Table
Ideal for Model Parts or Shop Work

Mill-Grind-Drill-Index-Rout curved or straight-Rabbet and Mortise on drill press or lathe. 8" Table, 4" Cross Feed, 360° Rotation, Accurately Graduated. Bolts to table. Order NOW! SAVE $100. Only **$54.50.** Less Rotary Feed **$43.75.** Write for "HOBB-E" Tool Circular.

CHICAGO TOOL and ENGINEERING CO.
8396 South Chicago Ave. Chicago 17, Ill.

SEND 30¢ stamps or coin for 3 oz. sample can **TASGON**

KEEP TASGON IN YOUR TOOL KIT!

A few drops of Cabot's TASGON — the fast-working, penetrating rust solvent — will do wonders for you in freeing frozen nuts, bolts, joints. Cuts through gummed-up oil and paint quickly and effectively.

SAMUEL CABOT INC., 966 Oliver Bldg., Boston 9, Mass.

SAVE UP TO $100.00 on your Storm Windows

Assemble Combination Redwood or Aluminum Storm Windows Yourself! **$6.50***

These patented storm windows regularly sell for $22.75 assembled. Now **only** $6.50 knocked-down and shipped to you. With only screen cloth and glass to buy locally, your total storm window cost is only about $8.50 each. Upper and lower sash snap out **from inside** for easy washing. Screen replaces top or bottom sash during warm months—self storing in upper portion in winter. Frame stays in year 'round. No storage problem whatsoever. Only top-quality kiln-dried redwood. All standard window sizes. Write for descriptive bulletin today, or send cash, check, or money order for quick delivery. We pay freight. Satisfaction guaranteed or money back.

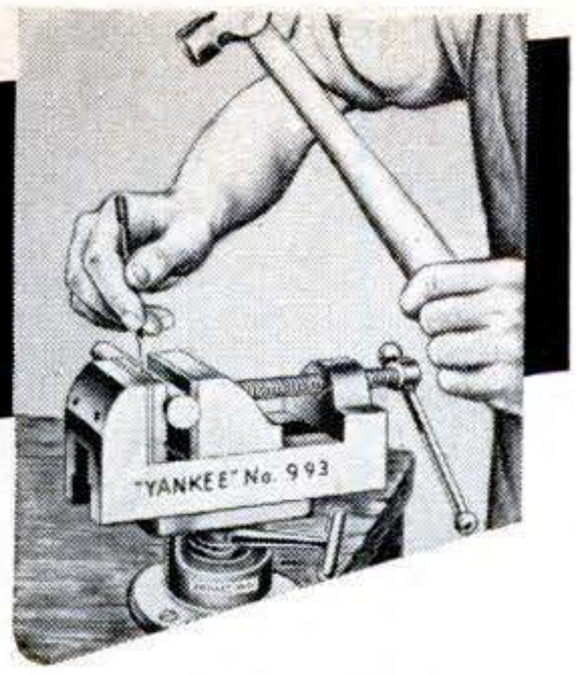
***Redwood, 24/24 Glass—others slightly higher.**

Dealers: A few choice areas are still available.

BUCKEYE SCREEN AND WEATHERSTRIP COMPANY
1378 South 22nd Street, Columbus, Ohio

Copyrighted material

ONE SET-UP for all work



"YANKEE" VISES

You line up work just once in a "Yankee" Vise, then follow through with every operation. Used with swivel base on bench for hand work, quickly removed from base for machine work. Its two-in-one use-value makes it popular in home shops. Four jaw widths: 1½", 2", 2¾" and 4".

Get FREE "Yankee" Tool Book. North Bros. Mfg. Co., Dept. 5, W. Lehigh Ave., Philadelphia 33, Pa.

"YANKEE" TOOLS NOW PART OF STANLEY THE TOOL BOX OF THE WORLD

Reg. U.S. Pat. Off.

NORTH BROS. MFG. CO., Philadelphia 33, Pa.

BUILD YOUR OWN

POWER SAW and MOWER IN ONE

SAVE UP TO $100.00

CUTS TREES and SCRUBS—QUICKLY CHANGES TO A LAWNMOWER.

Mow grass, weeds—or clear a field of scrub trees quickly, easily. FREE BUILDING instructions show how . . . Send name on postcard today.

T & H MFG. CO. Dept. S
811 East 31 St., Kansas City, Mo.

Your Finest Buy for HOME, FARM, WORKSHOP!

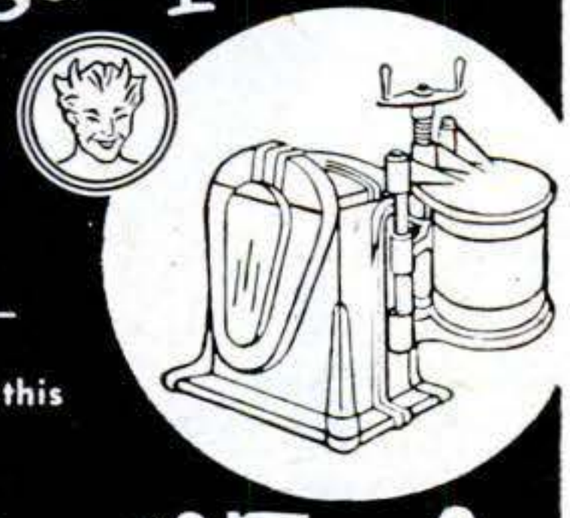
Black & Decker

ELECTRIC UTILITY TOOLS

PORTABLE ELECTRIC TOOLS

DRILLS • SANDER-POLISHERS • SAWS

Don't stir paint



2-minute shake-up in your dealer's Red Devil Paint Conditioner makes paint ready to use—fresher than fresh. Buy where you see this machine.

Red Devil Tools

IRVINGTON 11, N. J., U. S. A

Auto Economy Clinic

By Earl P. Taylor

Over 80% of the gasoline you put in your car is wasted instead of being used to propel your car. The following tips and items can help you attain greater fuel economy.

GASOLINE ECONOMY TIPS

1. Let your engine idle for two minutes each morning before you let out your clutch. Driving 5 blocks with a cold engine often uses more gas than 3 miles with a warm engine.
2. Buy your gas early in the morning before the gas in station tanks is expanded by the sun's heat.
3. Don't keep the tank too full. Gasoline is apt to slosh out while you are driving. Also, as it warms, it will expand and overflow.
4. Don't drive with the tank almost empty. The fuel will vaporize and escape through the air vent.

AIRPLANE TYPE, TRIPLE POINT SPARK PLUGS PROVE VALUE!

Designed to give top gas economy, quicker starting, and smoother performance, these new triple electrode plugs are guaranteed for 20,000 miles. Exhaustive tests have proven that the three points, which fire alternately and are pointed to give a hotter spark, can more than double plug life. "Triple Fire" plugs feature "Cardo Insulation" (first proven in fighter plane plugs) which resists heat, shorting and jacket breakage under the most severe use. Plugs can be quickly disassembled for cleaning . . no sandblasting necessary. Only 89c each, postpaid.

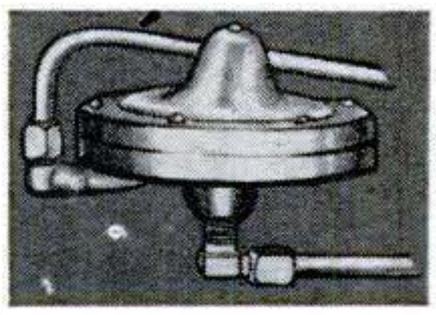
Engine Products Mfg. Co., Dept. AB-9
605 W. Las Tunas San Gabriel, Calif.

MOLYBDENUM LUBRICATION BIG POSTWAR ADVANCE

Auto-Moly is an outstanding new Molybdenum lubricant which plates vital moving parts of any engine with millions of microscopic "roller bearings." Tests prove this process can reduce frictional wear as much as 66%. MoS2 in oil (Auto-Moly) prevents scoring, seizure and bearing failure even if water and oil systems should momentarily cease to operate. By adding Auto-Moly to crankcase oil, all the oil becomes a Molybdenum carrier and gives both old and new cars up to 5,000 miles of almost friction-free performance. One can (full treatment) $1.15 postpaid. 4 cans (full year's supply) $4.00 ppd.

Pacific Lubricants, Dept. AM-9
628 N. Keenan St. Montebello, Calif.

FIRST *LOW-COST* FUEL PRESSURE REGULATOR HITS MARKET



More gas mileage for less money—it can be done with a new Fuel Pressure Regulator that's priced to please every car owner. This product is designed not only to save gas (by stopping fuel pump pulsation and "surge"), but gives smoother engine performance, reduces carburetor tuning. Tests show that the Regulator ends all power loss and motor stalling caused by sudden pressure drops during acceleration. Many motorists claim mileage increases up to 25%! $5.95 postpaid.

Newhouse Automotive, Dept. AR-9
5805 E. Beverly Blvd. Los Angeles 22, Calif.

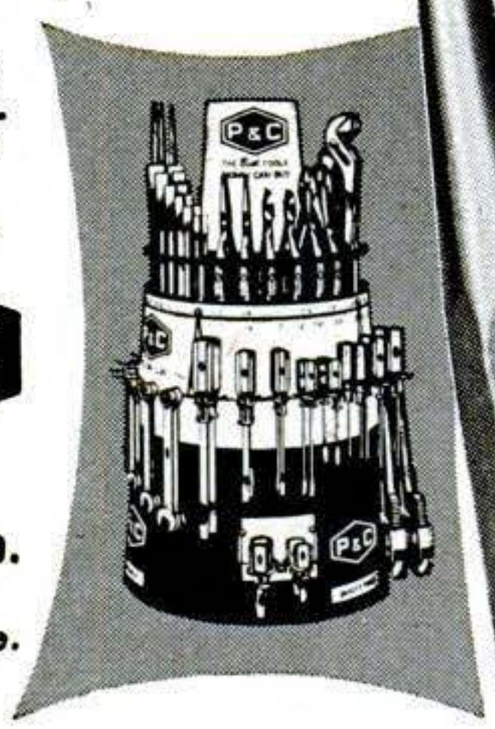
Copyrighted material

P & C Hot Forged Tools

Do the job *FASTER!*

You get down to business *fast* with P & C Tools. They're master craftsman designed to fit openings quickly... turn nuts and screws smoothly... get into tight places easily. And tough, too, with special analysis alloy steels scientifically heat treated. Look for the P & C rotary tool display unit at your favorite tool dealer's. He'll show you—"the *best* tools money can buy."

Write for handy pocket catalog. Complete data on some 300 P & C Tools.



P & C

P & C Hand Forged Tool Co.
Box 5926 F
Portland 22, Ore.

FURNISH YOUR HOME WITH YOUR HOBBY

Glueky Will Help You -

Save money . . . have fun . . . make your own furniture with famous Rogers Glue and Project Plans. Rogers Glue is easier to work — makes a stronger joint. Rogers Project Plans show you step-by-step how to build fine furniture. Send only 15c for a full-sized jar of glue and these valuable plans will be included *free*. Mail today to Rogers Isinglass & Glue Co., Gloucester, Mass.
Ask for Rogers Glue at your local hardware store.

"A Ton of Strength in Every Drop"

ROGERS
the best LIQUID FISH GLUE
GLOUCESTER, MASS.

ELECTRIC SHEAR SHARPENER

Over 85,000 Sold—It Must Be Good

Genuine Carborundum wheel ideal for shop or home use. Send remittance with order and shipment will be made at once, prepaid to your door, complete with electrical goods catalogue.

Motor driven **$9.75** complete with vise

WILLIAM MARVY COMPANY, Dept. 70
479 St. Peter Street St. Paul 2, Minn.

SHEET METAL BRAKES

Angles, flanges, Pittsburgh locks. 24 G. steel, heavier aluminum. Cam locking. Portable for bench, job or mount on truck. Truss Braced steel. Express collect.

30", 65 lbs. **$26.50.** 36", 75 lbs. **$31.00.** 48", 100 pounds, **$45.00.** Portable stands, 32" hi, 35 lbs. **$8.00.** 12" BRAKE fits in vise. Forms compound bends in 20 G steel. Not illustrated. **$12.50** Post Paid

IRON BENDER forms hooks, angles, eyelets, etc. Capacity 1/4 x 2", 5/16" x 1½", 10 parts, all steel, only . . . . . **$10.00 Post Paid**

Immediate delivery. Order direct, cash or COD, or write for folder.

VYKE BRAKE CO., S-1116 So. 27th St., Omaha 5, Nebr.

MAKE ANY SIZE FOLDAWAY TABLE, WORK BENCH ETC.

4 with **FOLDAWAY** TUBULAR STEEL **FOLDING LEGS**

COMPLETE 30" LEGS $7.98 PLUS POSTAGE FOR 12# WEIGHT OR SHIPPED EXPRESS COLLECT ORDER TODAY!

SHIPPED COMPLETE, READY TO FASTEN TO YOUR TOP IN A MINUTE • FOLDS FLAT, EASY TO CARRY AND STORE • RUBBER TIPPED • MAKE A SMART PING PONG DISPLAY, MODEL TRAIN, PICNIC OR BANQUET TABLE Satisfaction guaranteed.

FREE CIRCULAR

THE DIAMOND W MFG. CO. PS1 1100 ALTAMONT AVE. SCHENECTADY 7, N. Y.

---

the ORIGINAL!

WHIZ SAW

7 saws in 1
RIP, CROSSCUT, KEYHOLE, COPING, SCROLL, BAND OR JIG

The All Purpose Cutting Tool

Precision Made for Precision Work

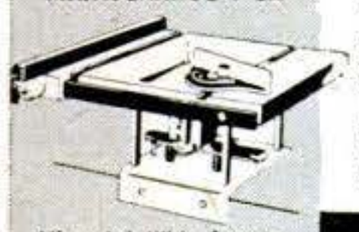
Home craftsmen will find Whiz Saw useful for rough cutting jobs as well as precision work. ACCEPT NO SUBSTITUTE . . . the original WHIZ SAW is one of the most versatile cutting tools ever invented. It cuts with amazing speed wood, bone, plastic fibre, pressed wood, hard rubber, etc. up to 1" thicknesses . . . it's scientifically designed for cutting inside shapes without first boring a starting hole. Ideal for jig or band saw use when inserted in handy WHIZ SAW table.

Whiz Saw #2 has greater capacity, cuts up to 2" thickness, $130.00. Whirl Saw, a 4½" circular blade, cuts up to 1¾" thickness, $49.00.

If not available at your dealers, write to: The Forsberg Mfg. Co., Bridgeport, Conn. U.S.A.

WHIZ-SAW $5500
Table $18.95

the ideal cutting tool for:
HOBBYISTS
ELECTRICIANS
CARPENTERS
PLUMBERS
SIGN-MAKERS
MAINTENANCE MEN



All-metal Whiz-Saw table may be secured with screws to wood bench or held in vise.

ANOTHER *Forsberg* PRODUCT
Makers of the Famous Whale & Viking Tools

NOW—40 different CUTS with AMAZING, NEW *Warren*

DADO SAWING WASHERS *On Your Saw Blade*

Just dial widths to cut parallel grooves perfectly smooth. No warp, vibration or trick screws. Strengthens blade, perfect balance. GUARANTEED! At your dealer's or order direct. Give arbor size—½", ⅝", ¾", 1".

ONLY **$4.95** PER SET

Send for free booklet

WARREN WASHERS COMPANY
Dept. 49, Box 98, North End Station, Detroit, Mich.

Copyrighted material

Ideal for hobbyists, craftsmen, repair shops, garages, model mfgrs., experimental labs, etc. Handles metals up to 1/4" thickness depending upon hardness. Shipped complete with 1/8", 3/16" and 1/4" punches and riveting dies. Check or money order must accompany order. No C.O.D.'s. Money will be refunded if not fully satisfied.

ALBERT J, TATU CO.

85 Columbia Dr. Dept. G Williamsville 21, N. Y.

DON'T RISK PAINT FAILURE

Get Free Book! No need for poor paint results. Fact-filled book, written by experts, tells what aluminum paint to use inside and out, on metal, masonry and wood. Costs you nothing, can save you dollars. Write for "Paint it Bright."

Aluminum Company of America, 1717-J Gulf Bldg., Pittsburgh 19, Pa.

Squeeze lever shut—and click!—VISE-GRIP locks to the work with Ton-Grip! Can't slip. Easily adjusts to ratchet action. Clamps, turns, twists, pulls, cuts. Does jobs no other tool can do—faster, easier! 7" and 10", with or without cutter. Only $1.85 to $2.60 at your dealer.

Manufactured Only By

PETERSEN MFG. CO., Dept. M-9, DeWitt, Nebr.

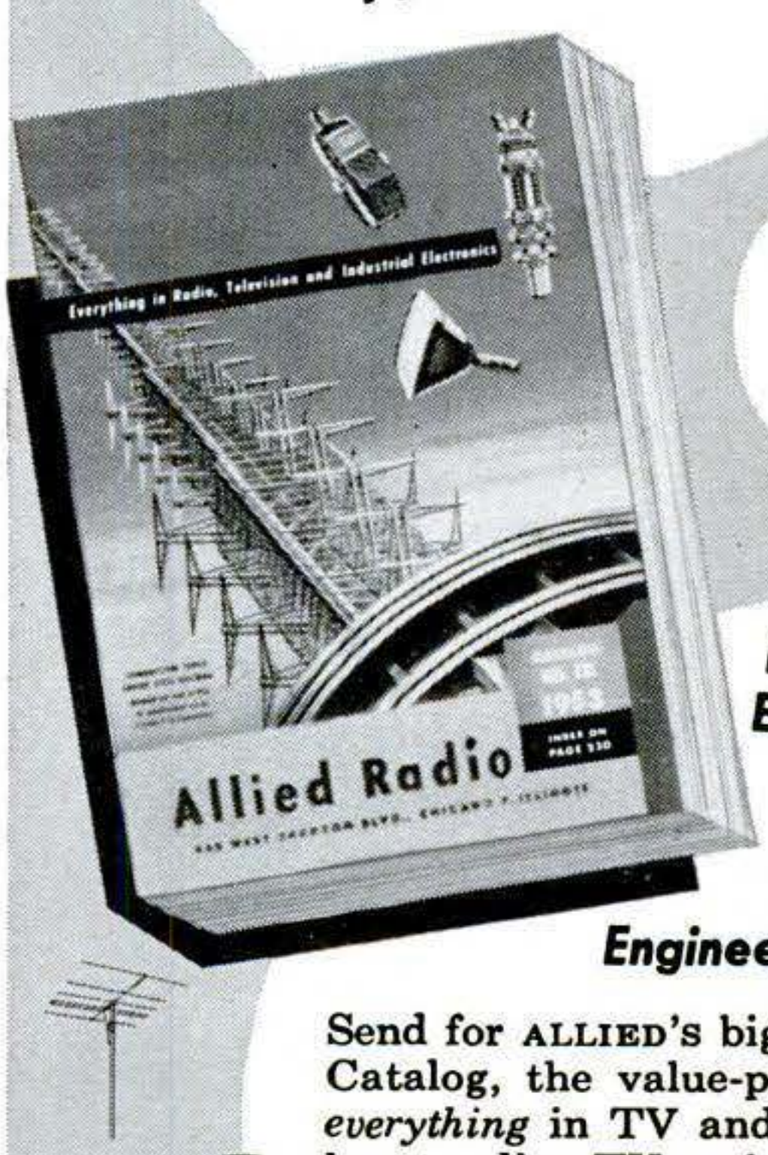
World's Most Complete!

1953 ALLIED

TV & RADIO CATALOG

FREE!

Everything in TV & Radio At Lowest Prices



236 PAGES VALUE-PACKED

Everything for Experimenters, Builders, Amateurs, Servicemen, Engineers, Soundmen

Send for ALLIED's big 236-page 1953 Catalog, the value-packed guide to *everything* in TV and Radio! Latest home radios, TV equipment, Amateur supplies, High-Fidelity Sound, P.A. Systems, new recorders, test instruments, builders' kits—plus the world's largest stocks of electronic parts, tubes, tools and books. Get more for your money—send today for your FREE 1953 ALLIED Catalog!

SEND FOR FREE CATALOG

ALLIED RADIO

ALLIED RADIO CORP., Dept. 7-JJ-2
833 W. Jackson Blvd., Chicago 7, Illinois

☐ Rush FREE 1953 ALLIED 236-Page Catalog.

*Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

Copyrighted material

Build Your Own *Week-end Cabin or Home!*

Pat 84
$1.00

A complete Living Unit in 12 ft. x 20 ft. space!

Easy, step-by-step directions. No blue-prints, but plain, simple words and pictures show just what to do, from staking out ground to hanging closet doors. Anyone who can handle a saw and hammer can build this cozy week-end cabin.

HAVE FUN — SAVE MONEY — BUILD IT YOURSELF WITH WELDWOOD® PLYWOOD AND EASI-BILD* PATTERNS. SEND $1., CASH OR MONEY ORDER FOR PATTERN NO. 84.

*(T. M. Reg. U. S. Pat. Off.)

UNITED STATES PLYWOOD CORPORATION

Largest Plywood Organization in the World

Pattern Dept., P. O. Box 215, Pleasantville, N. Y.

AUTUMN LEAVES VANISH LIKE MAGIC

with Easy Rolling

MOW-MASTER

Grind-a-Leaf

- **Pulverizes leaves instantly.**
- **Cleans lawns in a jiffy.**
- **Adds desirable mulch and humus to the lawn.**

NO RAKING
NO HAULING
NO BURNING

Featuring HANDY RECOIL STARTER

In Spring remove Grind-a-Leaf attachment and Mow-Master is ready for mowing lawns or cutting weeds. ONE MACHINE DOES IT ALL — Two H.P. engine — Light weight and easy to handle.

Write for colorful brochure and name of your nearest MOW-MASTER dealer.

Rotary MOW-MASTER Mower

Propulsion Engine Corp.

Subsidiary Food Machinery & Chemical Corp.

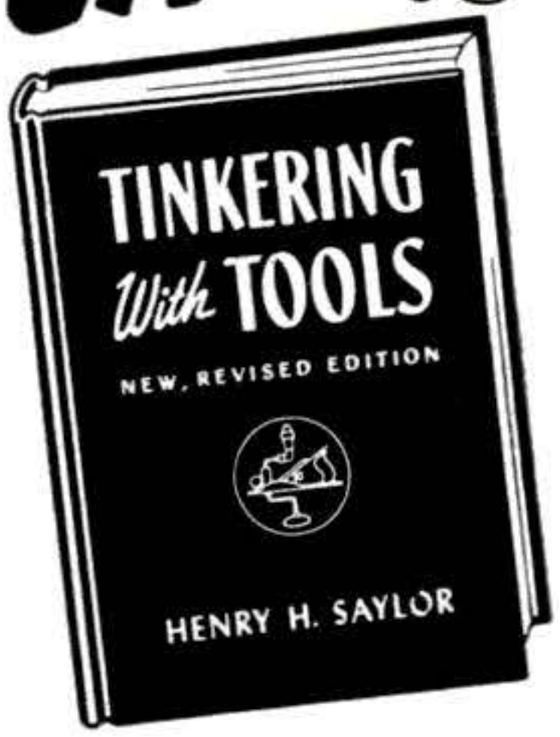
Dept. PS-9, 7th St. & Sunshine Rd., Kansas City, Kas.

SAVE UP TO 50%

BY DOING YOUR OWN HOME REPAIRS

NEW BOOK MAKES IT EASY!

ONLY $1.49



You can save *up to 50%* on home repairs — and have lots of fun besides — if you follow the simple, easy-to-understand instructions in TINKERING WITH TOOLS!

Tells you everything you need to know to cut repair bills—how to refinish floors and furniture, how to repair electrical appliances, and plumbing fixtures, how to lay sidewalks, shingle roofs, plaster walls, renew sash cords and hundreds of other repairs and improvements around the house! Never before has so much valuable information been crammed into one big cloth-bound volume to sell for only $1.49! Books of similar size usually sell for $2.50 or more!

SEND NO MONEY NOW!

Just mail coupon below and pay postman only $1.49 plus mailing cost for this DeLuxe edition. If, after 7 days' examination, you wish to return book *for any reason,* we'll gladly refund every cent you paid.

MAIL COUPON TODAY!

POPULAR SCIENCE—Dept. 952
353 Fourth Avenue, New York, N. Y.

Send me the new 260-page cloth-bound book, TINKERING WITH TOOLS. I will pay postman only $1.49, plus postage, on delivery. If dissatisfied, I may return book within 7 days for full refund.

NAME.....

ADDRESS.....

CITY..... ZONE..... STATE.....

☐ If you remit now, we will pay postage. Same refund guarantee.

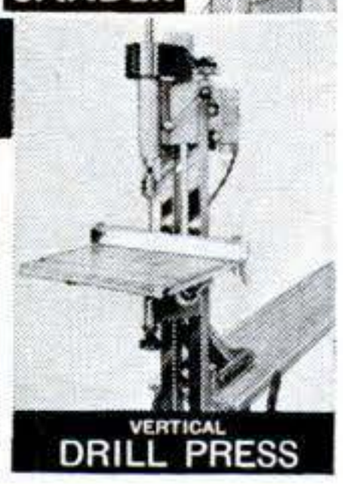
Copyrighted material

RETAIL PRICE $125.00

FACTORY TO YOU $79.95

SUPERSHOP is a PRECISION-BUILT WORKSHOP. 100% ball bearing. **All** running parts precision **ground.** Big capacity. Extra rugged. Amazing **value.** **Write for FREE catalog.**

BUY ON EASY PAYMENTS



POWER TOOLS, INC. 239 YATES AVENUE, BELOIT, WISCONSIN

NOW! FILE YOUR OWN SAWS

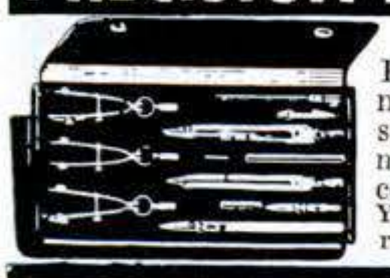
Do expert saw filing at home. Precision filing easy without experience. Two simple adjustments. Keeps any hand saw extra sharp and true-cutting. Complete with file. Money back guarantee. Cash with order, prepaid. (COD postage extra.) Order today. $2.95.

ANOTHER SPEEDCOR TOOL

THE SPEED CORP. PS-9

512 N.E. 73 Ave., Portland 16, Oregon

PRECISION-MADE DRAFTING SET



Imported From Germany

Excellently master-crafted from top-grade nickel plated brass. A 13-piece set with everything the draftsman needs. Includes 3 bows, compass, dividers. You save more than $10! Set regularly $20.00!

$6.95 ppd.

TINKERS PARADISE • 163 GREENWICH ST., N.Y. C.

ONE-MAN SAWMILL LOW AS $50.00 DOWN

FREE BOOK

Take BELSAW Portable Sawmill right to the trees—turn out valuable lumber for local yards—do "custom sawing" for neighbors. BELSAW lasts a lifetime. No crew needed. Power with old auto engine. Beginners get excellent results. Send postcard for FREE BOOK, "How To Make Lumber."

BELSAW MACHINERY CO

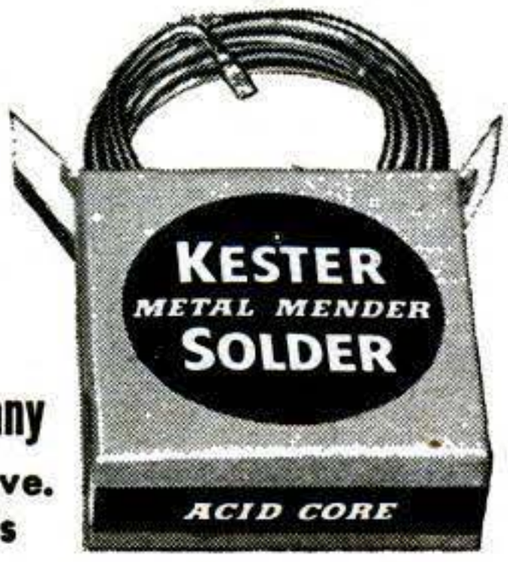
8464 Field Bldg. Kansas City 2, Mo.

USE KESTER METAL MENDER

(GENUINE TIN LEAD SOLDER)

For all Metal Repairs

FREE: "Soldering Simplified." 16 page illustrated booklet. Get your copy now.



Kester Solder Company

4254 Wrightwood Ave.
Chicago 39, Illinois

STOP!

✓ BURNING OIL
✓ PISTON SLAP
✓ POWER LOSS

OVERHAUL YOUR MOTOR IN *10 MINUTES* with a MOTOR RENEW KIT

CLEANSE with "MOTOR PURGE"

In the FIRST step of the famous Motor Renew treatment, the "Purge" formula cleans, quiets and frees rings, valves and pistons from efficiency and power robbing carbon, gums and varnish. Pour this miracle solvent into the cylinders, run your motor and watch the combustion residue billow out your exhaust pipe.

RENEW with "COMPRESSION SEAL"

RESTORE COMPRESSION... GET NEW POWER, SPEED AND ECONOMY

with "Compression Seal"! As the SECOND step of the Renew treatment, squeeze this self expanding mineral compound into your cylinders where it can fill worn spots (which cause compression leaks) between cylinder walls and pistons. Thus it restores compression . . . cuts oil-gas waste and eliminates costly engine overhaul and ring jobs.

100% MONEY BACK GUARANTEE!

A $100.000 insurance policy guarantees that this "Renew" treatment will not harm the finest engine.

DEALER INQUIRIES INVITED!

FREE Auto Manual With Each Order!

Kit treats all cars and trucks

$6.95 POSTPAID (Or send $1 deposit, balance C.O.D.)

CONSOLIDATED ENGINEERING, Dept. PSK-9

10407 W. Washington Blvd. Culver City, Calif.

Amazing!

3 in 1 JIG SAW SANDER FILER

with built-in electric motor

Outstanding Performance Features:

- A.C. 110 volt electric motor (3400 R.P.M.) plenty of power for sawing-sanding-filing!
- Cuts ½" wood, ¼" plywood, thin metal or plastic . . . fast and easy!
- Versatile: saw table tilts and rotates, cuts at any angle.
- Sanding table tilts through 45°.
- Saw cuts to center of 16" circle . . . rotates to cut longer lengths.
- Converts for filing, too!

CUTS SCROLLS LIKE MAGIC!

- *An electric power tool complete with built-in cooling fan!*
- *Absolutely safe . . . entire unit U. L. approved!*
- *Made of light weight cast aluminum . . . portable!*
- *Guaranteed for 90 days against defects!*

U. S. Patent No. D-161025

A terrific value For "Boys" 6 to 60

$16.95

Complete with

- ***3 PROJECT PATTERNS***
- ***3 SAW BLADES***
- ***ALLEN WRENCH***
- ***1 (4" x 9") VENEER***

EXTRA if you order TODAY!

Reg. $1.00 Set of 10 PROJECT PATTERNS that make it simple to make toys, household items . . . most anything, given as your FREE BONUS GIFT when amount *in full* accompanies order. (We pay postage.)

10 DAY TRIAL • MONEY BACK GUARANTEE

KENLEE Industries, Dept. PS 9, 2817 No. Clark St., Chicago 14, Ill.

☐ Enclosed is $16.95 (check or M.O. in full)
Send 3 in 1 Saw and $1.00 FREE GIFT both POST PAID.

☐ Enclosed is $2.00 part payment. I will pay postman balance plus postage on C.O.D. delivery.

Name_____

Address_____ Zone_____

City_____ State_____

Copyrighted material

For Better Work — FASTER — EASIER

THE **ZEPHYR** Electric Drill

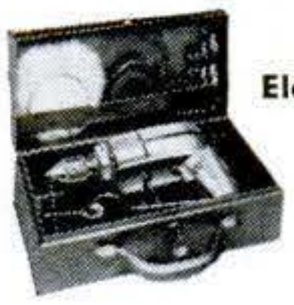
only $18.95

Handy . . . Speedy . . . Powerful. Has many uses around the home . . . in the shop . . . on the farm. Built to Last. Full ¼" Capacity.

DRILL STANDS *Add Many Uses for Zephyr Drill*

Horizontal Drill Stand— for Polishing, Buffing, Grinding, etc.

Price $1.00



De Luxe Electric Work Saver Kit

Adjustable Vertical Drill Stand— for drill press operations

Price $10.95

Includes above ZEPHYR Drill, plus 28 accessories for buffing, cleaning, drilling, grinding, mixing paint, polishing, sanding, sharpening, waxing, and wire brushing.

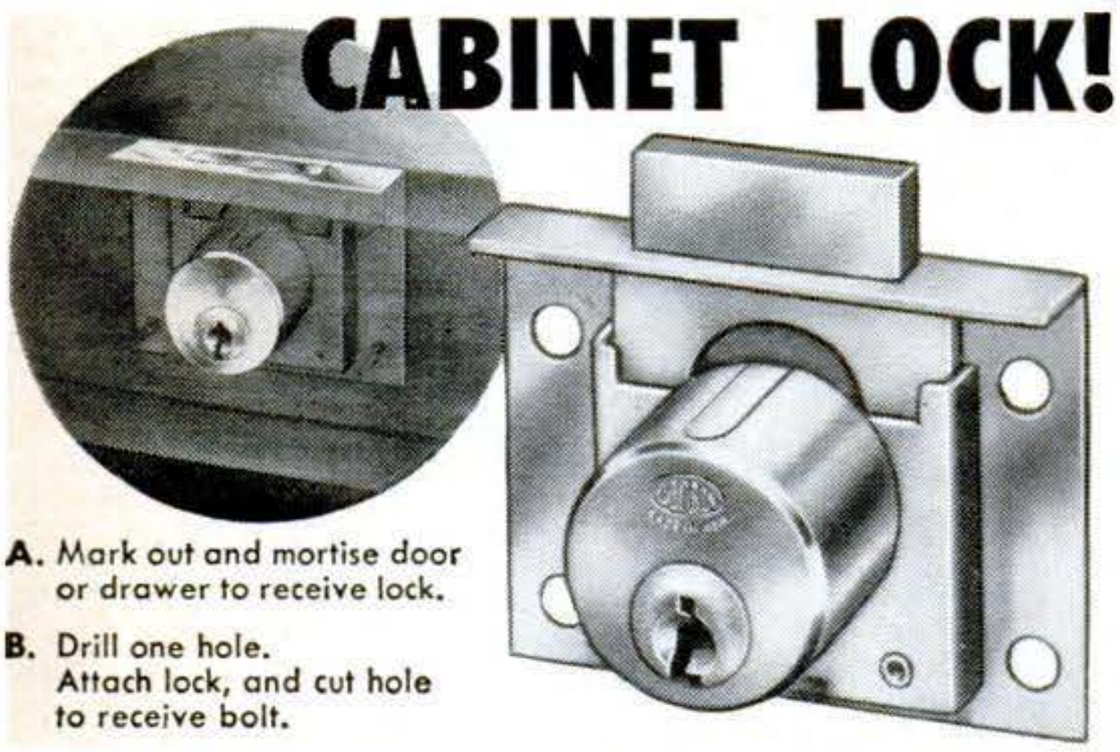
Price $27.35

At Hardware, Implement, and Building Materials Dealers, and Department Stores—or Write Direct

PET TOOLS PORTABLE ELECTRIC TOOLS, INC.
326 West 83rd Street, Chicago 20, Illinois

In Canada: Portable Electric Tools, Ltd., Toronto, Ont.

It's Easy to Install a CORBIN CABINET LOCK!



A. Mark out and mortise door or drawer to receive lock.

B. Drill one hole. Attach lock, and cut hole to receive bolt.

Better hardware stores everywhere have Corbin Cabinet Locks for *all* your cabinet work including:

DESKS, DRAWERS, CHESTS, WARDROBES, GUN CASES, CABINETS, TOOL BOXES

CORBIN®

Get the Corbin Cabinet Locks you need soon. They keep valuable papers secure . . . protect children from guns, tools, and harmful medicines.

CORBIN CABINET LOCK DIVISION
The American Hardware Corp., New Britain, Conn., U.S.A.

INSIDE-OUTSIDE PAINT PEELER

"Paint-Dozer"

$9.95 *complete*

Strip paint to bare wood at rate of 6-10 feet per minute! Big 16 sq. in. heating area blisters paint . . . attached rear blade strips it off in *one continuous motion!* Ideal for house exteriors, boats, cabinets, all woodwork. Excellent painter's tool! Faster, neater than blowtorch! Operates on household electric current. Even beginners do fast, clean work with "Paint-Dozer". Has long-lasting ceramic 1,000° Hi-Temp heating element; heavy stamped-steel construction; Marinite insulation; pistol-grip hardwood handle. Complete with front and rear detachable blades and skids; groove and ridge cleaners; 8 ft. neoprene cord; safety stand; attachable front guide handle for horizontal work. *Fully guaranteed!* Order from your dealer, or write today for this professional tool. *Fast shipment.*

OTTO KONIGSLOW MFG. CO., DEPT. S1
3610 PERKINS AVENUE • • • CLEVELAND 14 • OHIO

TEST CAR!

DRIVEN OVER 10,000 MILES
WITHOUT A BATTERY!
TESTING THE AMAZING NEW PATENTED INVENTION
THE SELECT-A-CHARGE REGULATOR
GREATEST ADVANCEMENT IN AUTO-IGNITION SINCE THE SELF-STARTER.
BURN-PROOF, SELF-CLEARING CONTACTS; DYMAMIC ARC-QUENCHING CIRCUIT; ADJUSTABLE AUTO-CHARGING VOLTAGE.
GUARANTEED 100,000 MILES OR ONE YEAR
ADJUSTABLE CHARGE; INCREASE OR DOUBLE BATTERY LIFE AND CHARGE; LAZY BATTERIES - DIM LIGHTS - WEAK SPARK - ETC., REJUVENATED; BUSINESS OPPORTUNITY, NO INVESTMENT, WRITE
SCIENTIFIC ELECTRIC CO. Box 2162D, Cleveland 8, O.

Assemble Your Own Ram Jet HELICOPTER

Scale model Hiller Ram Jet Helicopter kit. Complete with all parts, wheels, display stand, insignia . . . and full easy instructions. Makes beautiful plastic desk ornament. Can be assembled in an hour. Your choice of Civilian Model (Red), Navy (Blue), or Army (Olive Drab). Send cash, Check or M.O. Satisfaction Guaranteed.

$3.00 Complete Kit

LES MYERS, Inc. 21 So. 16th St. Philadelphia 2, Pa.

—MOTORISTS—

INSURE CONTROL ON CURVES
AVOID BLOW-OUT INSTABILITY
CONTROL SIDE SKIDS . . . ADD TRACTION

The Dr. Ross GYRO-SKID CONTROL, PRICED AT $39.95, has been tested and approved by traffic and safety departments from coast to coast.

To order or for full information write:

DENNIELS ENGINEERING
2530 BUHL BLDG., DETROIT 26, MICH.

MORE JOBS EASIER QUICKER

With Gear-Driven **"RED-E" GARDEN TRACTORS**

NO BELTS! NO CHAINS!

Proven For Over 29 Years

NEW 1952 MODELS

Thousands of satisfied users say "RED-E" has solved their tractor problems. You too, will like its smooth, powerful, easy-to-operate, gear-driven action—with power turning clutch for 4½ and 6 H.P. WALKING MODELS and automotive type differential for 7½ H.P. RIDING MODEL. Our 2 and 3 H.P. Walking Models low as $169.00. Attachments for plowing, sowing, cultivating, wood-sawing, snow-plowing, etc. EASY TERMS—Factory-To-You discount. Write for FREE Catalog.

RED-E TRACTOR CO. Richfield 319, Wisconsin

Copyrighted material

AIRPLANE WHEEL ASSEMBLIES

These wheel assemblies are all new, and of heavy duty construction. Depending on load desired to carry, they are ideal for House Movers, Farms, Trailers, Carts, Wheelbarrows, etc.

Complete with Wheel, Tire, Tube and Bearings

26:00 23:00 8:00x4 17:00 5:00x4 10½x4

Size 26:00, 10 ply tire, smooth tread, uses tapered axle size 3 in. x 2½ in. 10½ in. wide. Overall height 26 in. Static load 6,300 lbs.
Weight 54 lbs., Price $47.50 ea.

Size 23:00, 8 ply, smooth tread. This size complete with axle. Overall height 22 in., axle width 10 in. Static Load 4,700 lbs.
Weight 70 lbs., Price $37.50 ea.

Size 8:00 x 4, 4 ply, smooth tread—uses straight 1¼ in. axle, 6 in. wide. Overall height 17 in. Static Load 900 lbs.
Weight 13 lbs., Price $27.50 ea.

Size 17:00, 6 ply, smooth tread. Uses tapered axle, size 2 in. x 1¾ in. 8 in. wide. Overall height 17 in. Static Load 2,000 lbs.
Weight 18 lbs., Price $17.50 ea.

Size 5:00 x 4, 6 ply, smooth tread. Uses straight ⅝ in. axle, 3¼ in. wide. Overall height 13 in. Static Load 1,800 lbs.
Weight 8 lbs., Price $12.50 ea.

Size 10½ x 4, 6 ply ribbed tire. Uses straight ⅝ in. axle, 3¼ in. wide. Overall height 10½ in. Static Load 1,200 lbs.
Weight 8 lbs., Price $9.95 ea.

Prices F.O.B. Chicago. Include approx. postage on orders paid for in advance. C.O.D. orders enclose 25%, balance sent C.O.D.

U. A. S. Corp. Dept. PS-9, 5637 W. 63rd Pl. Chicago, Ill.

BULL DOG JACKS

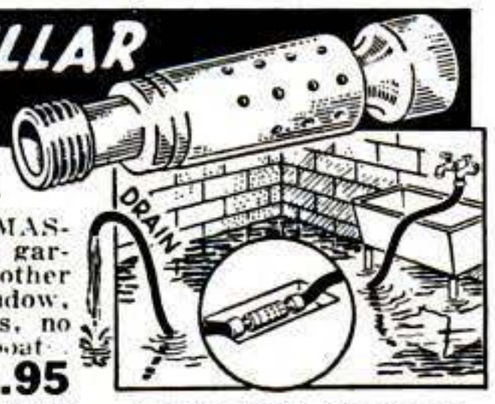
Makes parking or hitching trailers and heavy farm implements an easy, one-man job

All steel construction—heavy duty ball bearing swivel action . . . raise and lower with crank . . . complete with bracket, ready to install

Model No. 60-F Only $15.75 Post Paid (when paid in advance)

HAMMER BLOW TOOL COMPANY
Wausau 141, Wisconsin

NEW! SUCTION CELLAR DRAINER



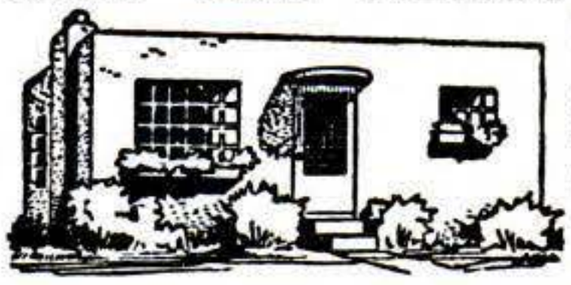
Capacity 300 GALLONS per Hour!
No more hand-pumping or bailing of flooded basements when you have DRAINMASTER. Just connect to a handy faucet with garden hose, submerge in flood water, run another length of hose to open drain or out a window, DRAINMASTER does the rest. Solid brass, no moving parts to wear. Drains fish ponds, boats, swimming pools, trenches, tanks, etc. ORDER TODAY! Be prepared for flood emergency.....

$3.95 *postpaid* *Money-Back Guarantee*

M. P. White Co., Dept. 1-PS, 55 Stuart St., Boston 16, Mass.

$750 BUILDS 4 ROOMS & BATH!

WHY PAY RENT?



For Seven Hundred Fifty Dollars and 30 days of your spare time, you can build yourself this Beautiful Home. Living room 11x15. Front bedroom 9x11, Back bedroom 10x12, Kitchen 9x11, Bath 5x8, Hall 3x4. Wind out steel Casement windows. Concrete block, stuccoed. $1.00 brings you Step-by-Step Instructions, Blueprint & Material List.

L. H. FARROW, Dept. D
Box 645 Columbus 16, Ohio

TOOLS AT WHOLESALE

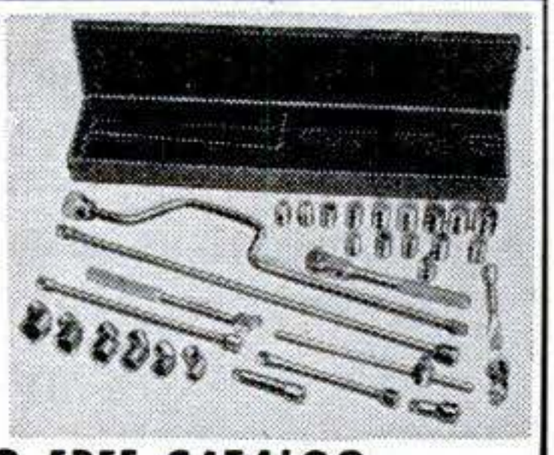
DIRECT FROM FACTORY

Full line of top quality, fully guaranteed, chrome, factory-new mechanics hand tools. You save

HALF REGULAR PRICE

for tools of this quality. Pay

EASY MONTHLY TERMS



WRITE TODAY FOR FREE CATALOG

MECHANICS CO-OP

Dept. B OAKLAND 8, CALIFORNIA

WHY PAY LIST PRICES?
Buy Wellworth Products
. . . Save up to 50%

Wellworth AIR COMPRESSOR
For Farm and Home Workshop

Compressor has 2" bore, 1¾" stroke, 2.8 cfm up to 150 lb. pressure. Motor required: ¼ h.p. at 100 lbs.; ⅓ h.p. at 125 lbs.; ½ h.p. at 150 lbs. or equivalent gas engine. V-belt cast iron pulley, intake muffler and cleaner, bronze bearings, splash lubrication. Wt. 16 lbs. Price of compressor, as described **$20.50**

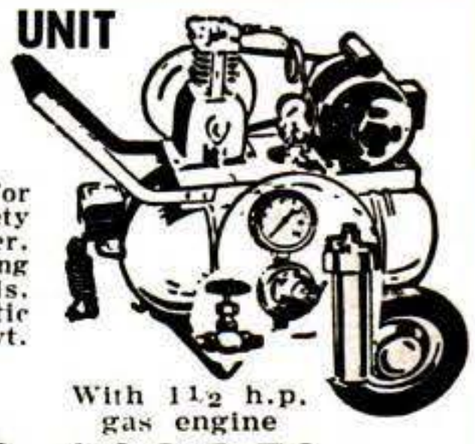
COMPLETE OUTFIT. Compressor, 6"x24" pressure tank, air gauge, air chuck, 20 ft. hose, pop valve, copper tubing with 4 brass flared fittings for connecting compressor to tank. 4-way cross and 3 nipples COMPLETE OUTFIT, wt. 30 lbs. **$32.45**

Equipment less compressor		Tank only	
with 6x24" tank	12.45	6x24"	6.25
with 12x24" tank	19.95	12x24"	14.50

MODEL W200 COMPRESSOR
2½"x2". 2.55 to 4.80 c.f.m. up to 150 lb. pressure, Operates with ⅓-½-¾ HP motor. Reg. price $36.50. Special price..... **$27.95**
Wt. 24 lbs.

MODEL W7 COMPRESSOR
2 cylinder 2½"x2". 5.10 to 8.50 c.f.m. up to 150 lb. pressure. Operates with ½-¾-1-1½ HP motor. Reg. price $67.50. Special price... **$54.50**
Wt. 45 lbs.

AUTOMATIC COMPRESSOR UNIT



⅓ H.P. heavy duty capacitor motor. AC 110 volts, 60 cycle, 2x1¾ inch piston type compressor, splash feed lubrication. 14x32" 22 Gal. tank, automatic pressure switch, CFM 2.8 at 100 lb. pressure, or 150 lbs. pressure for intermittent duty. Check valve, safety valve, air regulator with gauge and filter. 20 ft. air hose with air chuck for inflating tires. V. belt drive. Mounted on 2 wheels, ball bearing, with 2"x8" semi-pneumatic tires. Portable with handle. Shipping wt. 150 lbs.

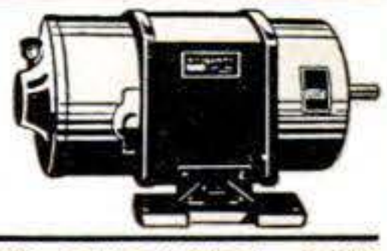
With ⅓ h.p. motor $160 Value	Less Motor	With 1½ h.p. gas engine
$98.50	**$79.50**	**$124.50**

"Wellworth" BLOWER BARGAIN

Quiet operating. Double wheel inlet, double width blower. For heating, ventilating, cooling, air washing, exhausting and forced draft. DIMENSIONS: 10" wheel; outlet 13⅛"x11⅜"; inlet 8¾". Height 19". Width 18". Depth 16½". C.F.M. ¼" S.P. 1600; outlet vel. 1575. Wt. 45 lbs. **BLOWER LESS MOTOR AND DRIVE.....** **$27.50**

With belt and variable speed pulleys, $2.50 extra.

LELAND GENERATOR



2500 to 3000 watts, 110 v. 60 cy. single phase 1800 r.p.m. self excited. Fungus treated for long life. 1951 model. Brand new, in original factory crate. Ship. wt. 135 lbs. List $375. SPECIAL PRICE **$195**

PRICES F.O.B. CHICAGO. MONEY BACK GUARANTEE. SEND CHECK OR MONEY ORDER TODAY. PROMPT SHIPMENT. **WRITE FOR OUR FREE CATALOG.**

WELLWORTH TRADING CO.

1832 S. Wabash Ave., Dept. B-952, Chicago 16, Ill.

WELD
BRAZE, SOLDER, and CUT →

ONLY $14.75 F.O.B. complete!

No experience needed. Follow simple instructions, weld on iron, steel, bronze, brass, aluminum, and other metals. Plugs into any properly wired 110 volt A.C. or D.C. line. Make or save time and money doing repair work for yourself and others. Repair men, farmers, tinsmiths, home and auto owners, hobbyists, etc., say FOUR-WAY pays for itself over and over. Order today or send for Free details.

ORDER NOW 10 DAY TRIAL

FOUR-WAY WELDER COMPANY, Dept. F3-JC
2326 So. Michigan Ave. • Chicago 16, Illinois

LARGER EQUIPMENT AVAILABLE ON REQUEST

Copyrighted material

It's a cinch to Install!

Combustioneer® AUTOMATIC HUMIDIFIER

A few dollars, your own tools, a couple of hours will give your home all the benefits of healthful, protective *automatically humidified air!* Yes, in your *present* warm-air furnace—coal, gas or oil! No plumbing necessary!

Exclusive **Combustioneer** *features*...Twin-Valves of stainless steel, can't rust, corrode or leak . . . "Noverflow", prevents water dripping *inside* furnace . . . big "Thirsty-Thick" ceramic plates for larger water evaporation area . . . Selector Dial for positive humidity control . . . Water pan of heavy non-corroding metal.

Low Prices! Model CH-300, 4 plates for 13" to 20" plenum (width or length), $20. CH-200, 6 plates for 22" to 25" plenum, $22, F.O.B. Springfield, Ohio. Prices include 10 feet of tubing, saddle valve and adjustable hinge face plate. Immediate shipment. Check or Money Order. **Combustioneer DIV.**

THE STEEL PRODUCTS ENGINEERING CO.
1256 W. COLUMBIA STREET, SPRINGFIELD, OHIO

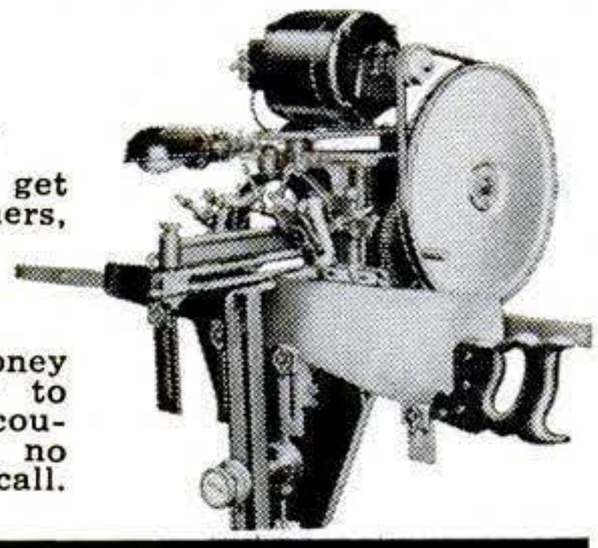
Make $20 to $30 a Week EXTRA MONEY!

With the high prices of food, clothing and everything else, just think what you could do with extra money every week! Turn your spare time into CASH—sharpening saws with a Foley Automatic Saw Filer pays up to $3 or $4 an hour. Start in your basement or garage—no experience necessary. "The first saw I sharpened with my Foley Filer came out 100%"—writes Clarence E. Parsons. No canvassing—"I advertised in our local paper and got in 93 saws"—says M. L. Thompson. With a Foley you can file all hand saws, also band and cross-cut circular saws.

FREE BOOK

Shows How to Start

If explains how you can get business from home owners, farmers, carpenters, schools, factories, etc. "I get work from 20 and 30 miles away"—says Charles H. Smith. Free Book, "Money Making Facts," tells how to start. Send coupon today — no salesman will call.



Send Coupon for FREE BOOK

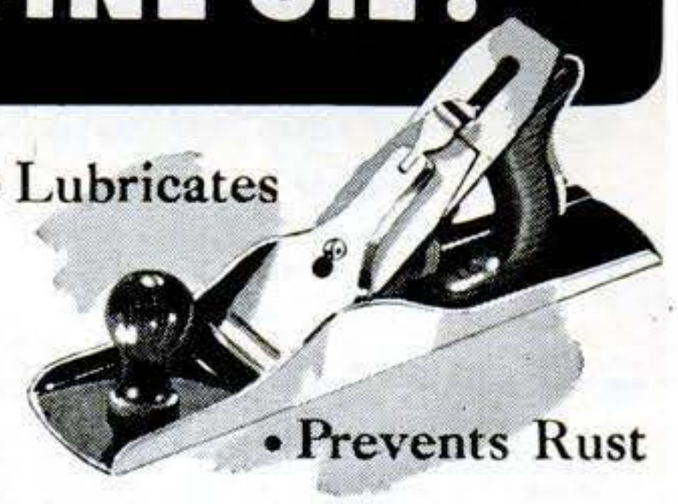
FOLEY MFG. CO.
919-2 Foley Bldg., Minneapolis 18, Minnesota

Send FREE BOOK—"Money Making Facts."

Name.....

Address.....

FINE TOOLS NEED FINE OIL!



• Lubricates
• Prevents Rust
• Cleans • Polishes

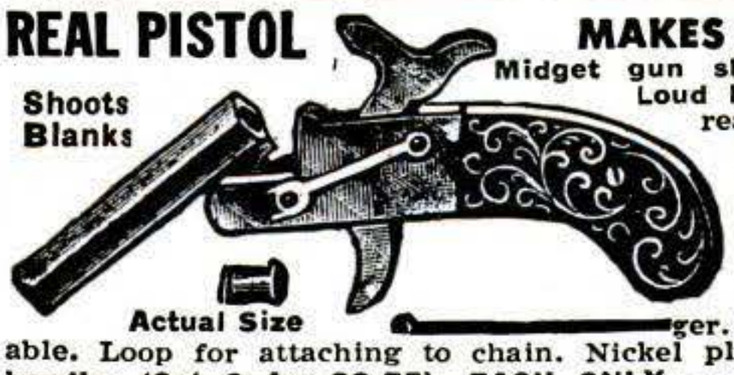
SOLD EVERYWHERE

3-IN-ONE Oil

BURN WATER IN YOUR CAR

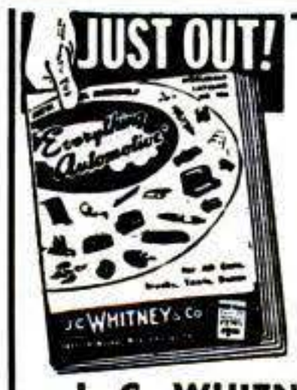
FREE LITERATURE ON REQUEST!
AGRICULTURAL DEPT. EXPERTS SAY WATER-ALCOHOL INJECTION BOOSTS MILEAGE!
Stop Ping! Improve mileage of all cars and trucks. Use regular gas with the new Octa-Gane water-alcohol injector. WRITE TODAY!
NEWHOUSE, Dept. AO 9, 5805 E. Beverly Blvd., Los Angeles 22, Calif.

REAL PISTOL MAKES LOUD BANG!



Midget gun shoots blank cartridges! Loud bang! Working model of real gun. Loud as .22 cal. blank (louder than cap gun). Illustration actual size, 1¾-in. long. Easily concealed. Barrel breaks open to load; ramrod ejects cartridge. Cock hammer, pull trigger. Cartridges always available. Loop for attaching to chain. Nickel plated, design handle. (Get 2 for $3.75). EACH ONLY..... **$1.95**

JOHNSON SMITH COMPANY, Dept. 548, Detroit 7, Mich.



1953 EDITION

It's New! It's Different! Get world's largest Auto Accessory & Parts Catalog and save money. Over 50,000 items, including Hollywood Accessories, Hi-Speed Equipment. Rebuilt Engines, all parts & accessories for all cars & trucks. We have that Hard-To-Get part! Jam packed with bargains. Completely illustrated. (100 pages) Send 25c (refundable).

J. C. WHITNEY 1917-F Archer Chicago 16

ELECTRIC MOTOR BARGAINS!

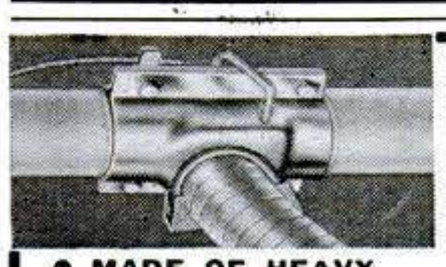
½ HP 1750 or 3450 RPM 19.75 — 1½ HP 3450 RPM 47.50
2 HP 3450 RPM 65.00 — 3 HP 3450 RPM 77.50

All prices F.O.B.
Immediate Delivery

Every Motor Fully Guaranteed

Heavy Duty, Repulsion Induction and Capacitor Types. 110-220 Volts, 60-cycle. Single-phase. Standard Makes (G. E., Wagner, Leland, Westinghouse, etc.). Rush your order **TODAY**—large stock of motors—1 & 3 phase. **32-v. direct current bargains. Prices f.o.b.**

ROBERTS ELECTRIC CO., 849 W. Grand, Dept. 32, Chicago, ILL.



- **MADE OF HEAVY PLATE STEEL**
- **UNIVERSAL—FITS ALL EXHAUSTS**

NEW! EXCITING!

JET EXHAUST CUT-OUT

Now your car can sound off those exciting, dynamic tones—easily controlled mechanically from your dashboard. Channel your exhaust through special pipes or muffler without removing your original muffler. Easily installed. MONEY BACK GUARANTEE

Send $4.95 check, cash, money order (postpaid) or C.O.D. plus postage to:

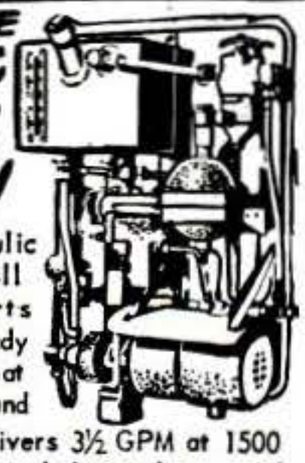
FUR SALES, 1031 E. 63rd St., Chicago 37, Ill. Dept. PS

Copyrighted material

SAVE UP TO 85% ON WAR SURPLUS "GADGETEER'S HEAVEN"

HYDRAULIC Special

COMPLETE HYDRAULIC POWER UNIT!!



Complete hydraulic pumping unit. All necessary parts assembled & ready to work at a great saving in time and cost to you. Delivers 3½ GPM at 1500 PSI at 1800 RPM. (other volumes and pressures can be attained by simple adaptations) Unit consists of a gear pump driven by a 2¼HP, DC motor (4000 rpm max.), relief valve, pressure unloading switch, filter, accumulator, reservoir with sight gauge & complete plumbing. Mounted on 19"x 25" aluminum panel. Complete with 24V-DC motor. (Other motors of any current can be adapted) **49.95**

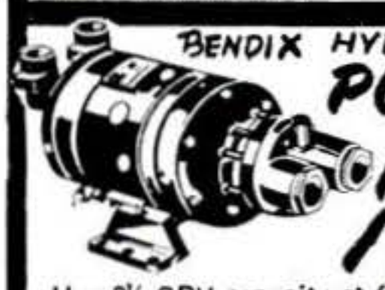
HYDRAULIC CYLINDER SPECIAL

Gives 20,000 lb. thrust (push-pull) using 1500 PSI line pressure as obtained from our hyd pumps. Or will produce 40,000 lb. thrust with 3000 lb. line pressure. Can ALSO BE OPERATED ON LOW PRESSURE AIR SYSTEMS. 4" bore, 1½" dia. piston shaft, 18" stroke, length: 30½". Equipped with ball bearing loaded clevis type mounting and swivel type high pressure steel pipe bracket for easy use. Ideal for road, farm & shop machinery, presses etc. Cost gov't $390.00 . . . . . **29.95**

No. 3 DOUBLE ACTION CYLINDER– Bore is 1" - Shaft is 1/2". Has a stroke of 2½" to 4". Stroke can be adjusted with internal sleeve stops. Overall length is 8½". Will take 1500 lbs. continuous duty. 3000 lbs. intermittent. Will lift or push up to 1100 lbs. **5.75**

We carry the World's largest supply of Special Hydraulic Equipment featuring over 20,000 cylinders in 61 sizes and types. Can also supply all accessories such as Pumps, Valves, Tanks, Hoses and Fittings. Write for information.

BENDIX HYDRAULIC PUMP AND MOTOR 19.50



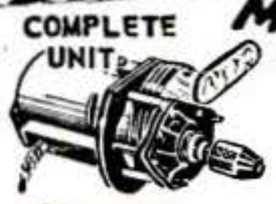
Has 3½ GPM capacity at 600 PSI. Motor is 1½ HP, 24V, DC. Operates on either 12 or 32V, DC current. Has built-in relief valve adj. to 1500 PSI. This unit ideal for bait tanks, hyd. lifts, portable loaders etc Cost govt. approximately $350.00.

VICKERS HYDRAULIC VARIABLE DISPLACEMENT PUMP GENERATOR

May be used as an elec. motor driven type pressure generator in an hyd. system where a varying volume is desired with a non-pulsating flow. Will give max. volume at pressure settings between 600 & 900 PSI by simple adjustment screw. Pump housing serves as reservoir for system. Has built in compressed air supercharger to make system independent of outside atmospheric pressure. Rotation, left hand only. Max. speed for continuous duty 3750 RPM. Displacement .484 cu. in. per revolution or approx. 4 GPM at 1750 **32.50**

MAKE YOUR OWN POWER DRIVE

AS SEEN IN AUGUST ISSUE OF POPULAR SCIENCE



COMPLETE UNIT

MOTOR 3.25

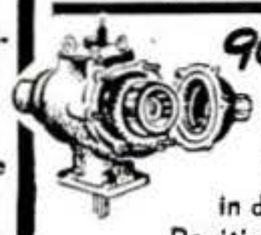
GEAR BOX NEW 12.95 USED 6.75

Here's a unit PACKED WITH BRUTE FORCE! Does all those hard, heavy jobs that ordinary power tools cannot handle. Easily made from a vacuum cleaner type motor, a gear reduction drive and a few homemade parts. Can be used for turning large nuts & bolts, digging post holes, drilling large holes in wood or metal, driving power tools & machinery, lifting, pulling, pushing, and any job where a slow speed with high torque is required. YOU CAN'T STALL IT! Lightweight, easy to handle. Has 1000's of uses in home, garage, shop, factory. We can supply all parts and supplies (except machine work).

3 SPEED TRANSMISSION

Converts a high speed, low power input into low speed, high power take-off. Has 2 take-off shafts at 4 to 1 & 16 to 1 ratio. Gear box has worm drive bronze gears & throw-out clutch. Will operate forward or reverse directions. Adaptable to many uses on power machinery **19.95**

90° TRANSMISSION



Has 1½ to 1 gear reduction through bevel gears. Pre-lubricated bearings in dust proof housing. – A Positive lever control clutch. Size. 7" x 6". – 3/4" take-off shaft **3.95**

HYDRAULIC HAND PUMP

Handle operated. Operating pressure 1000 PSI. Capacity 1.6 cu. inch per cycle. $55.00 Value – **10.75**

WESTINGHOUSE AIR COMPRESSOR

1000's now in use for spraying, inflating, air tools, in garages, laboratories, shops & on trucks, tractors, jeeps, etc. Lightweight but powerful. Operates on ½ HP, gas or electric motor Runs either direction. Delivers approx 3.27 CFM at 600 RPM or 6.54 CFM at 1200 Rpm. Has 2" bore, 1½" stroke.

We have motors, tanks & fittings to adapt this unit. **23.95**

GADGET MIXES

GADGET MIX – Rivets, Spacers, Bolts, Screws, Gears, Wheel Bearings, Springs and Clamps No. 106, 5 lbs. . . . **1.19**

BEARING MIX No. 170A – Approx. 20 needle, Ball & Roller Bearings, New and Used. Sizes. 1/2" to 4" Some of these cost Gov't $10 apiece. 5 pounds ONLY **1.59**

FILEMIX – 10 assorted Files – 4" to 12" Includes vixens, half rounds, mills, bastards, etc. – in seconds & used but good condition. One vixen alone is worth our price for entire mix. . . . . **99¢**

IMMERSION HEATER

Designed for installation in water base fluids, as in coffee urns, sterilizers, humidifiers, etc. Has two copper-sheathed, tubular heat elements, silver soldered into head. A 3-heat type. 3000 watt. 230V., 2" pipe thread collar. **12.00**

AGASTAT TIME DELAY RELAY

24v, DC energizing coil operates double pole, single throw switch. Holds circuit closed from a fraction to 15 sec. Adjustable for time desired. Adaptable to many uses **2.25**

AIRCRAFT CABLE

Rust resistant, alloyed steel. Extra flexible. Pre-formed, 7 x 19 strand. On reels.

1/16"	4½¢ ft. (7x7)	7/32"	11½¢ ft.
5/64"	5¢ ft. (6x7)	1/4"	12½¢ ft.
3/32"	5½¢ ft. (7x19)	9/32"	15¢ ft.
1/8"	7¢ ft. "	5/16"	16½¢ ft.
5/32"	7½¢ ft. "	3/8"	18¢ ft.
3/16"	10½¢ ft. "	1/2"	20¢ ft.

SPECIAL 3/16" cable, 18 feet long, with turnbuckle ends .99¢

Stainless Steel Cable – Pre-Formed

1/16"	7¢ ft.	5/32"	20¢ ft.
1/8"	18¢ ft	3/16"	23¢ ft.

Bronze Cable – Not Pre-Formed

1/16"	5¢ ft.	5/16"	23¢ ft.
1/4"	17¢ ft	1/2"	38¢ ft.

MAKE YOUR OWN ARC WELDER

Use this top quality, precision built R-1 generator An aircraft generator that originally cost the government approximately $400. Gives 300 to 400 amps at 27 volts. Ideal to convert for all welding, light or heavy up to 5/8" thickness. Free conversion instructions with each unit.

R-1 **27.95**

OTHER AIRCRAFT GENERATORS

X-10	12 to 15 Volts	50 Amps	$12.95
X-11	27 VOLTS . .	200 AMPS	$15.95
X-12	27 VOLTS.	100 AMPS	$25.00 NEW
X-13	. . . 27 VOLT.	140 AMP..	16.95
X-14	.. 27 VOLT..	75 AMP..	15.95

Also available - complete DC Arc Welder. 300 amps continuous. 350-400 amps intermittant. Write today for details.

230 PAGE CATALOG

1000's of ITEMS! Fully ILLUSTRATED! For the MECHANIC, SPORTSMAN, HOBBYIST, HOME OWNER, etc.

War Surplus — Factory Closeouts and General Merchandise Values! Save on Hardware, Hand & Power Tools, Gadgets, Sports Equipment, Hydraulics, etc. SEND 50c for HANDLING & MAILING.

ELECT. GYRO

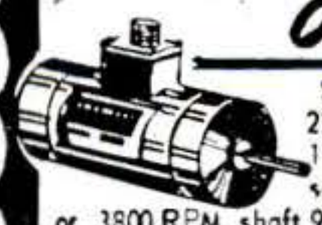
50,000 RPM. Motor is integral part of balance wheel. Has double end shaft to drive precision tools or machinery at precise, controlled speeds. Ball bearing mounted. High or low voltage. Ideal for experimental work, labs, hobbyists, technicians, etc. **4.95**

ELECTRIC MOTORS

606 – DELCO MOTOR

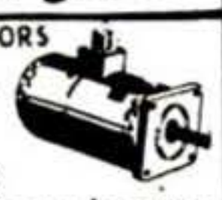
1/50 HP, 24v DC, 1.6 amp. turns 3000 RPM. Has adj. overspeed contactor to stabilize and control speed. Length 5½" Diam. 3". ONLY **4.95**

SAMSELL MOTOR



27 volts, 16 amps, 1/5 H.P reversible, series wound on motor 3800 RPM, shaft 9/32" diameter 12-spline 4-1/8" x 2-3/8" NEW ONLY **3.95**

SURPLUS MOTORS



No. 500 – Used 1/2 HP - 27 volt, DC–AC. This motor can be readily adapted to deliver up to 1/2 HP on 110 volts AC by the simple method of rearranging armature brush-leads. Free Diagram with each order. A SENSATIONAL VALUE. **5.95**

GEAR HEAD MOTOR

MOTOR ALONE 4.95

GEAR BOX 7.95

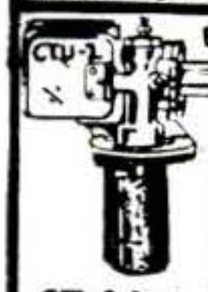
Heavy duty, G. E. GEAR HEAD motor. 2 HP, 24V, DC, 125 amp., reversible motor drives a reduction gear unit giving 36 to 1 ratio at take-off. Also will operate on 6 or 12 volts.

36 to 1 G.E. (306 shaft RPM)
28 to 1 Eclipse (130 shaft RPM)
40 to 1 Eclipse (110 shaft RPM) **10.95 EACH**

LEAR GEAR HEAD MOTOR

– Lear 24 volt DC, 7.6 amp, series wound reversible motor with overload clutch. Motor turns 11,000 RPM driving thru a 10 to 1 gear reduction box which turns the final take-off shaft 1100 RPM. Adjustable limit switches control limit of travel. Take-off shaft adapts to flex or rigid drive. **17.50**

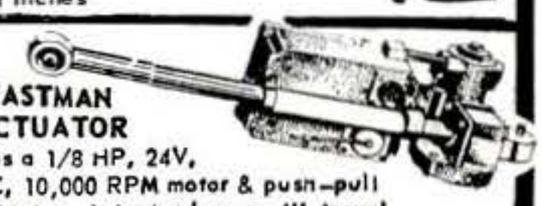
ELECTRIC ACTUATOR



Hundreds of uses for any mechanical device needing controlled 2 way action. Opens, closes, raises or lowers doors... windows..gates..valves

CTU-2 Foote Linear Actuator. 24 Volt, DC 8500 RPM, 1/6 HP - series wound motor 4-1/2" stroke in 13-1/2 seconds. Compression & tension loads up to 750 lbs. Adjustable micro switch for limits of travel Overall lgth. retracted 11 inches **7.95**

EASTMAN ACTUATOR



Has a 1/8 HP, 24V, DC, 10,000 RPM motor & push-pull actuator Actuator has a 4" travel through a reduction gear box Has adjustable limit switches and forward and reversing reversing relays Overall length extended, 20", retracted 25½". **12.95**

FIRE EXTINGUISHER

Kiddie Lux – CO^2 Type. Built to Gov't specifications. Heavy, shatter-proof case. Recent hydro static test. Reconditioned and fully charged. LIKE NEW! READY FOR INSTANT USE!!

3½ lb. size with Swing Nozzle . .	17.95
7½ lb. size with Horn	23.75
10 lb. size with new Squeeze Grip Handle & 3½ ft. flex hose with Horn	29.75
15 lb. size with Wheel Control . .	37.95
15 lb. size with Squeeze Grip Handle, 4 ft. flex hose, Plastic Horn . .	42.50

PALLEY SUPPLY CO.

NEW MAIL ADDRESS
2263 EAST VERNON AVENUE
DEPT. PS-9
LOS ANGELES 58, CALIF.

Order From This Ad. Pay by M.O. or check. P.O's. accptd. from D&B firms. ½deposit with C.O.D's. All Prices FOB Los Angeles.

Copyrighted material

[Continued from page 94]

Some 2,500 others got off with warnings.

The radar apparatus that has been such a help to the Connecticut State Police is called an Electro-Matic Speed Meter. Behind its front panel are two antennas. One sends out a cone-shaped stream of radar waves in whatever direction it is pointed, much as a searchlight focuses light beams. Whenever a moving object gets in their way, some of the waves bounce back. They rebound at a different frequency than the one they started out with. This change in their frequency varies directly with the speed of the object that reflects them.

Evidence Is Recorded

The reflected waves, caught by the second antenna, are compared with the ones being sent out to get the difference in frequency. This difference is amplified and translated into miles per hour on a large speedometer. (Similar equipment is used to measure the speed of high-altitude rockets and guided missiles.)

When the Connecticut State Police use radar for traffic *enforcement*, they need a recorder. It has a spring motor driving graph paper on which a pen, synchronized with the speedometer, records the speed of each oncoming car as it moves within range.

Connecticut's traffic-court judges willingly accept the visible, permanent evidence of the radar graph when backed up by a witnessing officer's testimony. So the officer with the radar speed meter sits facing the same direction as the meter. When the graph recorder fingers a speeder, he radios a teammate to stop it, and jots down the car's registration number opposite the telltale peak on the graph. Then he notes the time of day, weather condition and state of traffic—a neat combination of evidence for the judge.

Testifies for the Defense, Too

Radar has also been used to defend law-abiding drivers in Connecticut. The State Police frequently receive complaints about speeding through residential areas.

Sgt. Albert Kimball, who has worked with the radar equipment since it was first acquired, usually is sent to the scene of such complaints. The unblinking, unbiased eye of radar then takes a long look at the situation.

"Almost invariably," Sergeant Kimball reports, "the speed meter proves that the average driver isn't going nearly as fast as he looks and sounds to be."

The meter, which is manufactured by Automatic Signal Division, Eastern Industries, Inc., East Norwalk, Conn., has helped police catch traffic violators in 31 states—and even in Bermuda, where the speed limit is a flat 25, and no fooling.

In Massachusetts, however, radar is being put to work at quite a different highway job—establishing more intelligent speed limits. State traffic engineers, under the direction of Armand L. Phaneuf, use radar to watch the flow of cars over dangerous sections of road. They work unobtrusively, for they feel that the average driver would instinctively slow down if he spotted odd-looking instruments checking his speed.

For the legal limit, the engineers pick the speed at which or below which 85 percent of the radar-observed drivers travel a stretch of highway. In this way, radar has now set the speed limits on 30 percent of Massachusetts roads.

Works for Insurance Company

West of the Mississippi, radar is improving the safety record of 500,000 long-distance trucks insured by the Farmers Truck Insurance Group. That company keeps 16 traffic engineers busy observing, with radar speed meters, the road behavior of drivers handling policy holders' trucks.

The transmitter-receiver is usually mounted on the roof of the engineer's car. Instead of lurking beside a highway, he will often cruise along the roads until he sees the rear of a truck. He then approaches to within 75 or 100 feet of the truck, and settles down to constant speed—say, 35 miles an hour. The radar apparatus instantly records the difference between his speed and the truck's. He merely has to add the two figures to find the speed of the truck.

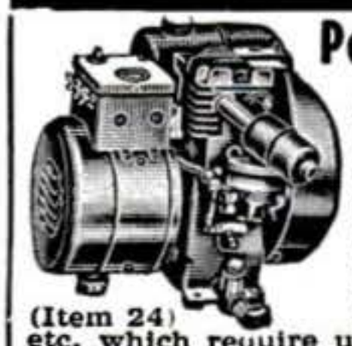
No dirty trick, this works out to the advantage of a large majority of drivers. In a recent year, favorable reports were turned in on 94 percent of them. Like most people, they keep within speed limits whether they are watched or not. END

It's Not Easy

ONE expert maintains that the most difficult thing to make on a car is the payments.

Copyrighted material

BUY WHOLESALE FROM FACTORY SAVE 50-85%

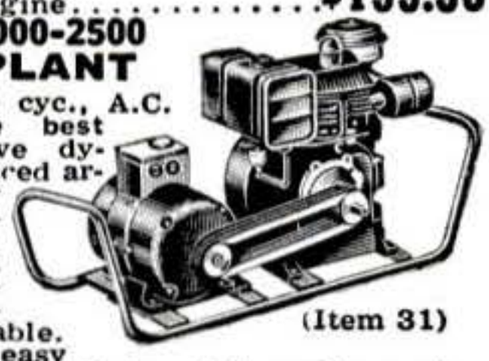


Portable LIGHT PLANT

PUSH BUTTON START

(Item 24) 500-700 watts 110-120 v. — 60 cyc. A.C. Powered by a sturdy dependable, easy starting, air cooled 1¾ hp. gas engine. No wiring necessary, just plug in and operate. Plenty of current for any oil burner, freezer, brooder, pump, emergency lights, etc. which require up to 700 watts. Ideal for Civil Defense, Fire Depts: trailers & camps. Complete with Voltmeter and built-in winding to charge 6 v. auto batteries. Wt. 85 lbs. Fully guaranteed. **Be prepared if war or storm knocks out power lines.**
Reg. $275.00 value..... **$143.50**
700-800 Watt Plant (Item 44) **$169.95**
Same as above but greater output.
1000-1200 Watt Plant (Item 45) same as Item 24, but larger generator & engine..... **$199.50**

GIANT 2000-2500 WATT PLANT



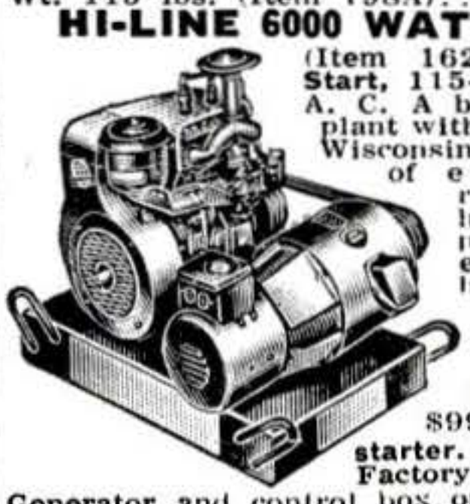
(Item 31)

110-120 V. 60 cyc., A.C. **Absolutely the best made** — exclusive dynamically balanced armature; heavy windings develop up to 5000 watt overload for motor starting. Skid-mounted—portable. Powered by easy starting Briggs or 6 hp. **Wisconsin engine** —complete with all accessories; engine easily disconnected for other uses. Big outlet box, voltmeter, no wiring necessary. Ample current for all purposes. Factory warranty and instructions included. Wt. 220 lbs. Reg. $585.00. Special at... **$299.50**
With Electric Self Starter (Item 179) **$359.50**
GENERATOR ONLY and control box. Drive it with your engine or tractor.. **$169.50**

3000-3500 WATT PLANT

(Item 198) 110-220 v.—60 cyc. A.C. with Wis. Engine, **push button start.**
Wt. 370 lbs. Heavy duty..... **$399.50**
Generator only for belt drive, Wt. 115 lbs. (Item 198A)..... **$239.50**

HI-LINE 6000 WATT PLANT



(Item 162) **Push Button Start,** 115-230 v. 60 cycle A. C. A brute of a power plant with a rugged 13 hp. Wisconsin engine. Plenty of electricity for ranges, water heaters, freezers, pumps, machinery, etc. Affords both 110 and 220 volts. Ideal where heavy current is needed. Wt. 590 lbs. Easily worth $995.00. **With self starter.** Factory Spec. **$645.00**
Generator and control box only, belt driven. Use your engine or tractor. Wt. 240 lbs..... **$345.00**

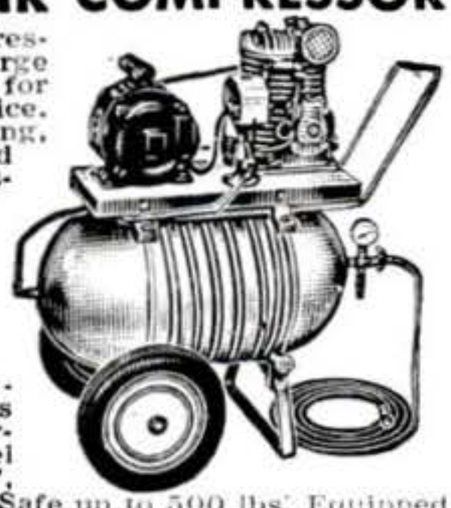
Write for information on any sizes not listed

AUTOMATIC. Any of our light plants can be furnished with full automatic controls for as little as $100.

Buy Wholesale—Direct From Factory—World's Largest Direct Selling Light Plant Factory

You can pay more — but you can't buy better

MASTER AIR COMPRESSOR



(Item 209) High pressure type for large volume of air for heavy duty service. For paint spraying, inflating truck and auto tires, greasing, and the hundreds of other jobs done by compressed air. Piston type. 2"x2" compressor with built-in air filter. Master built with hi-strength alloys and precision bearings. Stainless steel tank, 12" x 24", 2100 cu. in. cap. Safe up to 500 lbs. Equipped with automatic switch that starts and stops motor to maintain desired pressure (up to 150 lbs.) and check valve, safety valve, gauge, shut-off valve, 20 ft. air hose and tire chuck. Beautifully balanced on ball bearing wheels and rubber tires. Note low factory prices.

With ⅓ hp 110 v. A.C. motor (Reg. $175.00) (Item 209)..... **$98.50**
With ½ hp motor (Reg. $199.50) (Item 209A)..... **$119.50**
With 2 hp Briggs Gas Engine (Reg. $199.50) (Item 209B). **$109.50**
Compressor only (2"x1¾") (top quality) (Item 209C)..... **$20.50**
Larger Compressor (2"x2") (none better) (Item 209D)..... **$24.50**
Giant Compressor (twin 2½"x2") (Item 209E)..... **$54.50**

A complete line of spray guns and air tanks available at factory prices.

IMMEDIATE DELIVERY—ALL ITEMS

HEAVY DUTY D-C ARC WELDER

(Item 38)

Use as portable or shop welder. Up to 300 amps. Senior model. Made for years of trouble-free, continuous service. Will handle light or heavy jobs. Easily welds up to ¾" plate using ¼" rods. Built-in air-cooling system. Arc is easy to strike and hold, because of specially designed arc stabilizer. Hi-lo switch and dial control gives wide range of welding heats. Run welder at 2600 rpm. with tractor, jeep or 15 hp. gas engine, or 7 hp. elec. motor. Complete with instructions, guar. and double V belt or flat pulley. You can pay more, but you can't buy a better welder. Wt. 110 lbs. $400 value at.. **$99.75**
DUAL CONTROL MODEL same as above but with built-in dual rheostat for low heat soldering, brazing, welding. Spec. **$119.50**
WELDING KIT. Two 10 ft. leads, welding helmet, electrode holder, ground clamp. Sold only with welder at.... **$10.50**

EXTENSION CORD

(Item 16) 40 ft. heavy duty, made of specially insulated No. 14 2-conductor wire. So tough that you can drive over it and yet flexible and easy to handle. Resists oil, grease or water. Extends electricity up to 400 ft. without voltage drop. Use indoors or out. Complete with heavy rubber plug and outlet. Wt. 2½ lbs. Usually $4.50—Special 40 ft. **$1.99**
Comb: 2-40 ft. and 1-20 ft. (total 100 ft.) **$4.95**
100 foot length (one piece)..... **$4.85**
WIRE ONLY (Item 50) No fittings, 100 ft. **$4.00**

HEAVY DUTY POWER CABLE

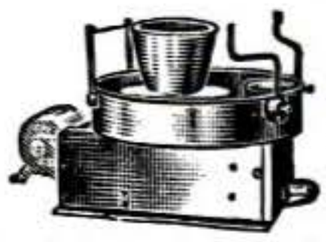
#12—2 Cond.—stranded, very flexible, rubber covered, special outside conductor for grounding power tools, etc. Finest heavy duty power cable made. U.S. Surplus.
50 ft. (Wt. 8 lbs.) Item 199..... **$6.95**
100 ft. (Wt. 16 lbs.) Item 200..... **$12.95**

79 Pc. CARPENTER'S TOOL SET

Professional quality. A complete set of Master Mechanic tools featuring the famous **Stanley** brand. All neatly arranged in a beautiful sturdy 32" hvy. steel tool box. Set includes: Powerful ¼" Electric Drill (optional), 3 Stanley Wood Chisels, 29" Spring Steel Saw, Steel Bench Vise, Tin Shears, 9 Drill Bits, Sharpening Stone, 8" Plane, 24" Stanley Level, Hacksaw, Stanley Rule, 5 Double End Wrenches, 13 Asst'd. Hacksaw Blades, Stanley Hand Drill, 10" Vise Wrench, Comb. Square, Stanley Hammer, Stanley Ratchet Brace, Coping Saw, 7 Coping Saw Blades, Steel Wrecking Bar, 4 Screw Drivers, Offset Screw Driver, Nail Set, 4 Asst'd. Files, 8 Pc. Allen Wrench Set, Auger Bit Set and many other tools. Worth at least $150.00 if purchased separately. Save cost of tools on one or two jobs. A terrific value.
Wt. 41 lbs. Item 242 (without Electric Drill) **$39.50**
Wt. 45 lbs. Item 242A (incl. Electric Drill)..... **$49.50**
Wt. 15 lbs. Item 243 (Tool Box only) **$8.95**

POTTER'S WHEEL

Power Driven — Foot pedal speed control



New compact modern design. Precision built to meet exacting requirements of professional artists — the finest wheel ever built. Mechanism fully enclosed for safety and to exclude moisture and clay. Foot-controlled variable speed drive provides instant, smooth speed range of 30 to 150 rpm. Equipped with adjustable arm rests. Easy to operate — even for handicapped persons. Reversible 10" throwing head — back side recessed for casting plaster bats. Larger **18x18"** throwing table; wedging wire attached; removable water cup inside. Heavy bronze bearings pre-lubricated, sturdily built for long, dependable service. Use ¼ hp motor (not incl.). Shipped fully assembled—just mount wheel and motor on table or sheet of ¾" plywood. Self storing—tip up on edge. Wt. 45 lbs. List price $125. Factory special. **$64.50**

Factory Prices on Catalog Items
Send 10¢ for **BIG 1953** catalog.
Hundreds of bargains

MASTER SNOW BLOW SELF-PROPELLED

It's a lawn mower — **It's a plow**
It's a power sickle — **It's a bulldozer**
It's a cultivator — **It's a rotary tiller**

Tractor shown with Snow Blow Attachment

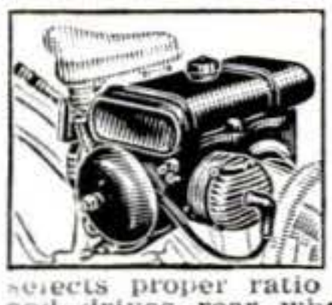
Here at last is a power unit that does everything at a price that can't be matched. Built-in power takeoff to drive pumps, saws, generators, etc. Safety clutch—can't burn out. More versatile and efficient than tractors costing twice as much. Basic self propelled 2 hp tractor with Briggs or Clinton famous engine. Only.... **$119.50**

Item 206

Snow Blow	**$29.50**
Rotary Tiller	**$42.50**
Sickle Bar-Mower	**$42.50**
Bulldozer	**$11.25**
Lawn Mower Hitch	**$ 4.50**
Cultivator	**$ 8.75**

Freight prepaid to most areas. Easy payment plan available.

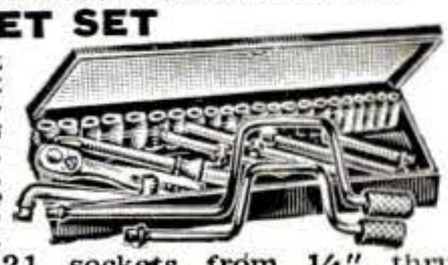
COMMANDO BIKE MOTOR



(Item 90)

New, super-modern 1952 model. This job is the Cadillac of all bike motors. Sensational Auto-Clutch prevents killing motor at each stop. Also selects proper ratio on hills. Mounts behind and drives rear wheel with Dynarotor. Free Wheeling lever permits pedalling if desired. Rear Mounting eliminates fumes, heat, dirt, and hard steering. Easily installed in 15 minutes with home tools. Sturdy, trouble-free, easy starting, light weight. Airplane type engine; up to 150 miles per gallon. Fully guar. Ride for fun or profit. Ideal for deliveries, paper routes, messenger service, etc. Ride to work and save. **Dealer inquiries invited.**
The Commando Captain, 1 cylinder 1½ hp. **$99.75**
The Commando General, 2 cylinder 3 hp. (Item 91)..... **$125.00**
All Commandos shipped prepaid in U.S.

32 pc. SOCKET SET



32-pc. Socket Set (Item 59) Highest quality guar. non-breakable sockets made by Husky. Beautiful, matched chrome alloy, absolutely the best. Complete range of 21 sockets from ¼" thru 7/16" in ¼" drive and 7/16" thru 1-1/16" in ½" drive; 2 extensions, reversible ½" ratchet, adaptor bit, slide head, all angle coupling, 2 end wrenches, ¼" speeder handle and sturdy metal tool box. For prof. mechanics who want the best. Wt. 14 lbs. Easily worth $41.50. While they last. **$16.95**

45 pc. SOCKET SET

(Item 205) Contains a complete set of sockets in ½" drive, ⅜" drive and ¼" drive, plus all necessary extensions, handles, speeders, reversible ratchets, etc.; all uncond. guaranteed against breakage. Beautiful matched chromed thin wall alloy sockets in a sturdy handsome steel tool box. Wt. 17 lbs. List Price $62.90. Factory Special.. **$26.95**

⅜" DRIVE 15 Pc. SOCKET SET

(Item 201) Same top qual. as above—includes 7 sockets ⅜" thru ¾", reversible ratchet, extension, flex. handle, cross bar, 3 punches, metal tool box. Wt. 5 lbs. List Price $18.96. Our Spec..... **$9.95**

HYDRAULIC JACKS

(Item 208) Heavy duty, precision built, smooth, positive acting with built-in relief valve. Hi-Lift with screw extensions. Govt. surplus at a fraction of orig. cost. (Handle included.)
1½ ton (Item 208) Wt. 11 lbs..... **$6.45**
3 ton (Item 208A) Wt. 15 lbs..... **$9.45**
5 ton (Item 208B) Wt. 17 lbs..... **$11.45**

HEATING & VENTILATING FAN

(Item 10) Easily installed in furnace pipes. Forces even heat to all rooms. Over range, removes kitchen smoke and odors. Powerful continuous duty motor, 110-120 v. A.C. Quiet, super efficient fan moves huge volume of air (400 to 600 c.f.m.) 8" Fan, wt. 5 lb. **$6.35**; 9" Fan, wt. 6 lbs. **$7.45**; 10" Fan, wt. 7 lb. **$8.45**; 12" Fan, wt. 8 lbs. **$9.45.**
Heavy-duty 12" fan, enclosed motor, suitable for spray booths, restaurant exhausts, poultry houses, and other difficult applications. Wt. 12 lbs. Item 10D..... **$12.95**

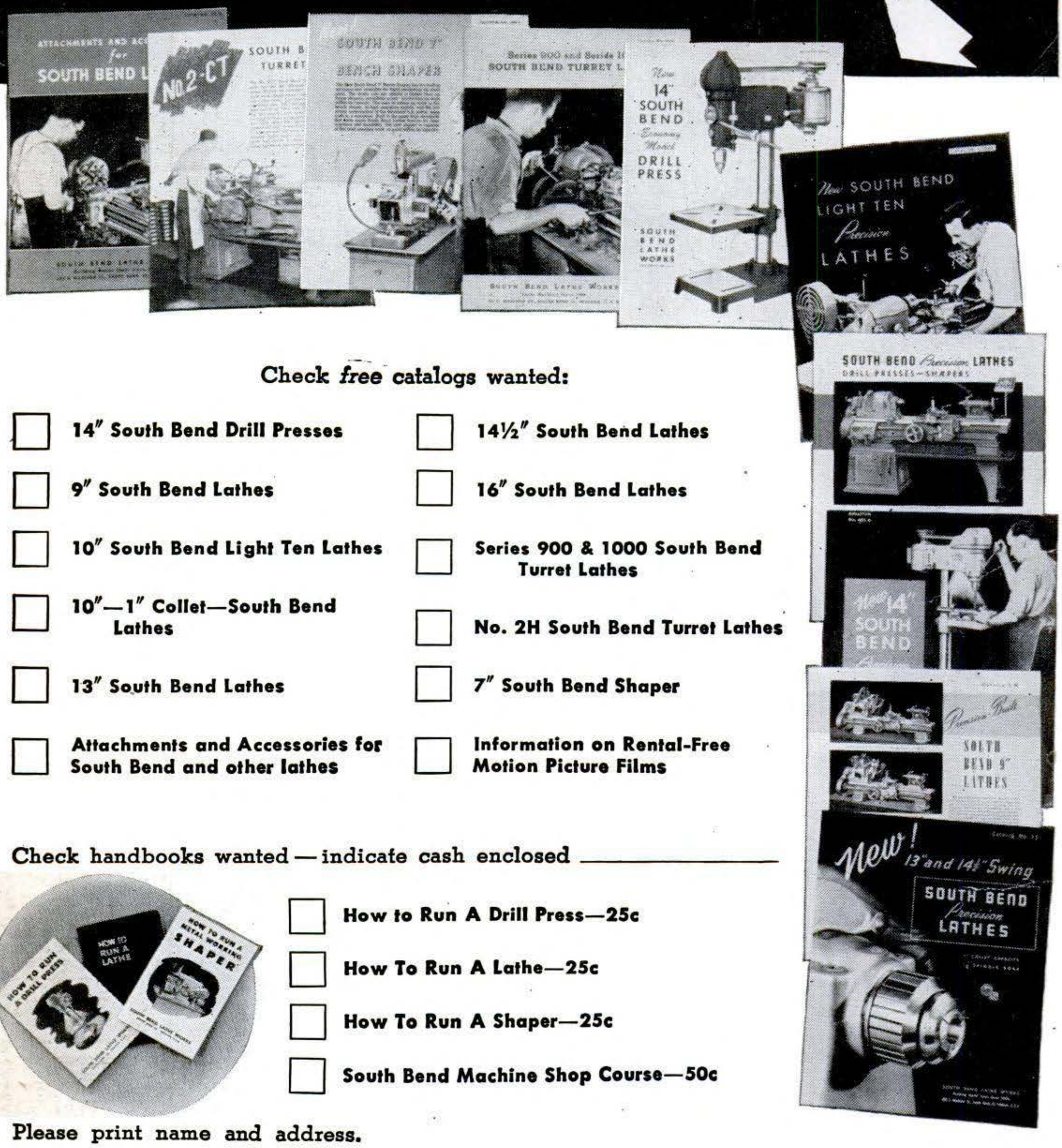
All items *brand new*. Prices f.o.b. Chicago area. 10 day Money back guarantee. Send check or M. O.

MASTER MECHANIC MFG. CO., DEPT. 93A Burlington, Wis.

Copyrighted material

HELPFUL BOOKS

EVERY MACHINIST SHOULD HAVE



Check *free* catalogs wanted:

- ☐ 14″ South Bend Drill Presses
- ☐ 9″ South Bend Lathes
- ☐ 10″ South Bend Light Ten Lathes
- ☐ 10″—1″ Collet—South Bend Lathes
- ☐ 13″ South Bend Lathes
- ☐ Attachments and Accessories for South Bend and other lathes
- ☐ 14½″ South Bend Lathes
- ☐ 16″ South Bend Lathes
- ☐ Series 900 & 1000 South Bend Turret Lathes
- ☐ No. 2H South Bend Turret Lathes
- ☐ 7″ South Bend Shaper
- ☐ Information on Rental-Free Motion Picture Films

Check handbooks wanted — indicate cash enclosed _____

- ☐ How to Run A Drill Press—25c
- ☐ How To Run A Lathe—25c
- ☐ How To Run A Shaper—25c
- ☐ South Bend Machine Shop Course—50c

Please print name and address.

Name_____ Street_____

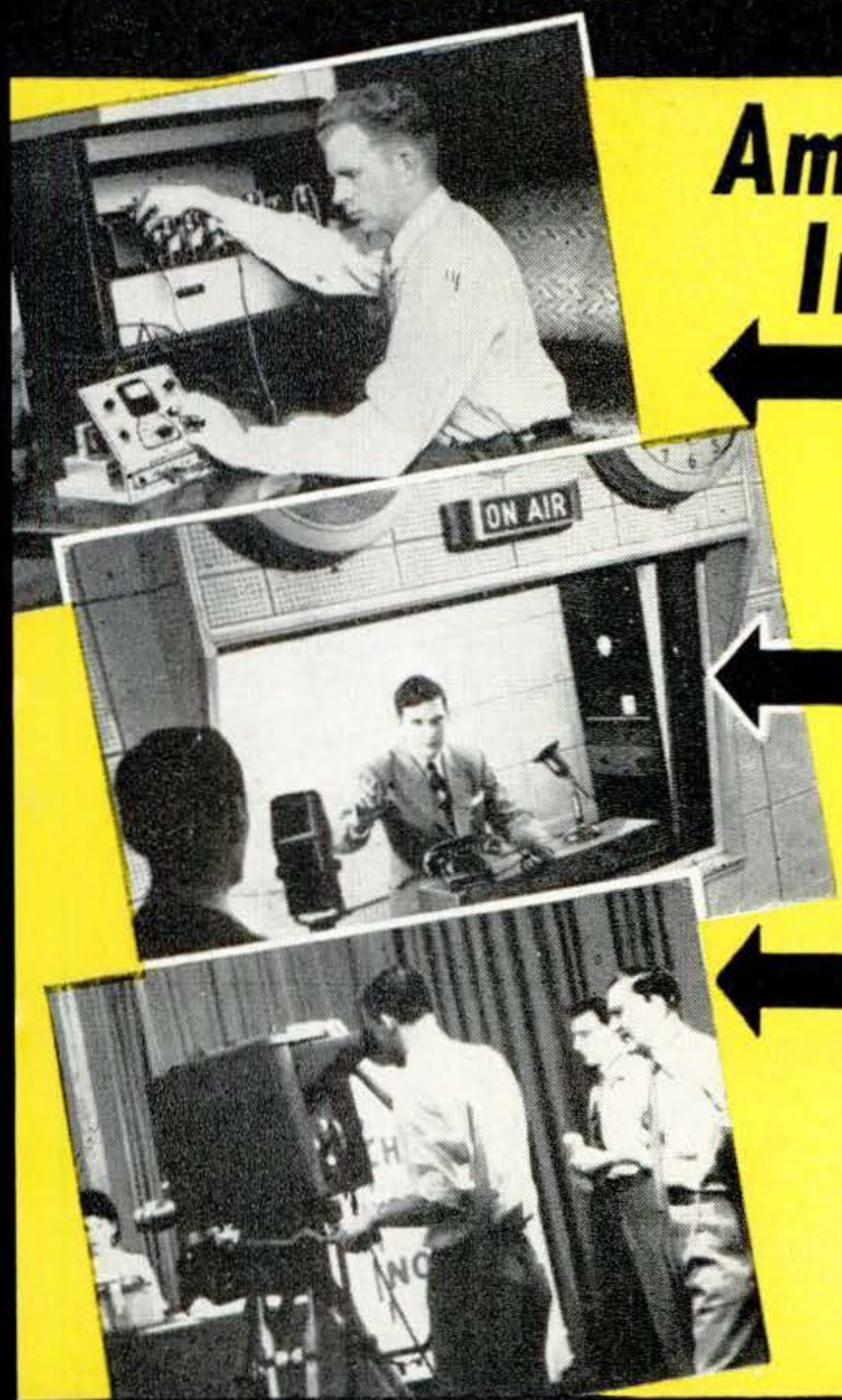
City_____ Zone_____ State_____

SOUTH BEND LATHE

SOUTH BEND 22, INDIANA • *BUILDING BETTER TOOLS SINCE 1906*

Copyrighted material

Will Train You AT HOME in Spa
Good Jobs in RADIO-TE



America's Fast-Growin Industry Offers You

1. EXTRA MONEY IN SPARE T

Many students make $5, $10 a week and more EXTRA neighbors' Radios in spare time while learning. The day yo I start sending you SPECIAL BOOKLETS that show y Tester you build with kits I send helps you make extra servicing sets, gives PRACTICAL EXPERIENCE on common to Radio and Television. All equipment is yours Send postage-free card today for Actual Lesson and 64-pag

2. GOOD PAY JOB

What will you be do year from today . . . be on your way toward a good job or a business of your Radio-Television? NRI Courses lead to these and many oth Radio and TV servicing, P.A., Auto Radio, Lab, Factory a tronic Controls Technicians, Radio and TV Broadcasting, Ship and Airways Operators and Technicians. The United has over 105 million home and auto Radios—over 2,900 Br ing Stations. Radio is growing, more expansion is on the

3. BRIGHT FUTURE

Think of the oppor in Television. It now from coast to coast with over 15,000,000 TV sets now in TV stations operating. This means good pay jobs with futures for operators, installation and service technicians. the time to get ready for a successful future. My lesson both Radio and Television principles and equipment I furni you practice on circuits common to both Radio and Te

Television is Today's Good Job Mak

Over 1800 additional Television stations have been authorized wi expecting to be operating in 1953. That will cause the sale and of sets to boom in areas where there is no television now. All th opportunity, good pay, if you act to prepare **now.** Qualified Radio-T technicians are making u good money. Now the will increase; the field is

YOU LEARN BY PRACTICING *in* Spare Time WITH KITS I SEND

With both my Communications Course and my Servicing Course I send you many kits of parts you use to build equipment for practical experience. They "bring to life" my easy-to-understand, illustrated lessons. Shown here are just a few pieces of equipment you build. You use them to make many tests, experiment with circuits common to both Radio and Television. Read about and see photos of other equipment in my FREE 64-page Book. All equipment is yours to keep! Mail card now. No Postage Needed.

Find Out What R Television Offers

Keep your job while tra home. Hundreds I've tra successful Radio-Televisi nicians. Most had no experience, many no m grammar school educati cide now that you are know more and earn mo the important first st career and security.

MAIL CARD NO

Send the postage-free c for my FREE DOUBLE You get Actual Servici son. Also my 64-page boo to Be a Success in Television." Read what m ates are doing, earning; s ment you practice with Mail card now. J. E. Pres., National Radio Inst ington 9, D. C. Our 39

The Tested Way to Better

Why did you change to Camels, RICHARD CARLSON?

"I tried **Camels** as my steady smoke to see how they suited my throat. They get on fine with my **throat**, pack after pack, and you can't match them for **taste**!"

Smoke only Camels for 30 days...see for yourself how well

Camels agree with your throat!

● See for yourself why Camel is America's most popular cigarette — leading all other brands by billions.

Smoke only Camels for thirty days and see how Camel's rich flavor pleases *your* taste . . . see how Camel's cool mildness agrees with *your* throat, pack after pack! Prove to yourself in your own "T-Zone" how mild and flavorful Camels are!

TEST CAMELS IN YOUR "T-ZONE" (T FOR THROAT, T FOR TASTE)

R. J. Reynolds Tobacco Co., Winston-Salem, N. C.

CAMEL leads all other brands *by billions!*

Copyrighted material